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Columbia
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School of Dental
and Oral Surgery
1985-87



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The Faculty of Dental and Oral Surgery

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The School of Dental and Oral Surgery

The School traces its origin to 1852, when the New York State legislature chartered the New York College of Dentistry, later renamed the New York College of Dental and Oral Surgery. In 1916 Columbia University, having recognized dentistry as an integral and important part of the health sciences and a true university discipline, established its own school of dental education. Shortly thereafter, the new Columbia University dental school absorbed both the New York Post-graduate School of Dentistry and the New York School of Dental Hygiene. In 1923 it was joined by the New York College of Dental and Oral Surgery to form the present School of Dental and Oral Surgery of Columbia University, thus completing a series of unique and complex mergers.

The institution has remained a leading force in dental education and research ever since its establishment. In the early 1920s Professor William J. Gies of the Columbia Biochemistry Department established the International Association for Dental Research, the first organization devoted exclusively to research in the field of dentistry. In 1926 Professor Gies prepared the report *Dental Education in the United States and Canada* for the Carnegie Foundation for the Advancement of Teaching. This was a major critique of dental education in the United States, and its publication resulted in the acceptance by dental schools throughout the country of the basic educational policies and objectives developed at Columbia University.

DENTISTRY IN THE 1980s

In recent decades, complex societal and governmental forces have had an increasing influence on dental education and the practice of dentistry in the United States. Government has come to view health services in the same light as public utilities, and members of the public have come to view themselves as active participants in the health care system rather than as passive recipients of treatment.

Through advances in research and through the evolution of newer modes of practice, the field of dentistry has developed the capacity to deliver quality dental care to large numbers of individuals. A major unsolved problem is how to devise ways of using this great capacity to provide care at a reasonable cost to a greater proportion of our population, including those who do not now have adequate and easy access to dental care because of poverty or special problems such as handicaps, age infirmities, or remoteness of location.

Just as the practice of dentistry is undergoing considerable change, dental education similarly faces a number of challenges for the future. The School of Dental and Oral Surgery is responding to these challenges through the development of new instructional programs and long-range planning designed to provide flexibility in educational options.

A necessary mission of the School is to prepare dental students to face a professional future in which many changes may be anticipated. Students completing the D.D.S. degree within the next few years will enter a professional world in which traditional health care systems and the old values are still strong. While they must be

able to function successfully and contribute to some existing career role in that world, it is equally important for today's students to recognize that during their active professional life span of approximately forty years the health care system, including dentistry, surely will change substantially.

Changes in the economics of dental health care may also be expected from scientific research aimed at reducing the prevalence of dental caries and other dental diseases. The need for well-trained dentists in this country will remain strong, however, as the growing population of elderly persons in the United States who require care will place a new set of demands on the dental care delivery system. While it is difficult to predict accurately the outcome of these forces on dental practice, it is clear that future graduates in dentistry must be provided with an education that will permit them to adapt to a changing way of life and a changing demography. The new dentist must have the commitment, the capacity, and the ability to continue to learn during a long and constantly changing professional lifetime. These are attitudes and skills that must be fostered in the dental educational process.

CURRICULUM

Many departments of the University contribute to and collaborate in the education of dental, postdoctoral, and dental hygiene students, assuring them a broad foundation for sound professional development. The guiding educational policy of Columbia University is the pursuit of excellence, and the primary goal of the School of Dental and Oral Surgery is the preparation of graduates equipped to fulfill their obligations to the individual, to society, and to the profession.

The University, recognizing the need for greater emphasis on the prevention of dental disease, constantly strives to revise the academic program. The curriculum is designed to increase a student's appreciation for the conceptual basis of dentistry. Adequate preparation for the demands of dentistry requires an understanding of broad biological principles integrated with a continually evolving body of scientific information in clinical dentistry and basic dental research. Predoctoral students, as directed observers, are exposed to a full spectrum of dental problems. They are then introduced to surgical and manipulative procedures as well as to methods of diagnosis and the prevention of disease. Emphasis is on the close relationship between health and disease, both systemic and oral; on systemic aberrations that affect oral structures; on diseases of the face and mouth that may affect other organ systems; and on oral health as an essential component in total health.

Clinical training is broad in scope. It is designed to produce competence in the recognition of oral disease and disorders, stress the essential role of prevention in the control of oral disease, establish the concept of maintaining oral structures in optimal health, and develop skills in the planning and rendering of treatment.

A curriculum must be considered as only the initial framework for a student's lifetime participation in the profession of dentistry. To this end, the curriculum cultivates in students habits of independent thought and scholarship and encourages the continual evaluation of new knowledge. Attainment of professional competence and future development are encouraged by fostering the spirit of inquiry, and the School stresses the application of scientific methods and student participation in research.

Knowledge of the processes of human growth and development and of the prevention of disease and abnormality has resulted in an extensive reduction in infant and child mortality, and in a marked increase in the life span of the individual. In dentistry, prevention of dental and oral disease and disorder provides an opportunity for children to reach adulthood with complete, healthy dentitions. The increased life span of Americans, on the other hand, presents many physiological, pathological, and psychological problems that are peculiar to the aged and must be considered when rendering dental treatment to elderly patients. The School has therefore developed a comprehensive program to train students in geriatric dentistry. Individuals with medical, neurological, and other handicaps also present special problems, and they have been able to receive dental treatment since the establishment of special facilities in the School such as the Treatment of the Handicapped Clinic.

The School also provides for the training of auxiliary personnel to augment dental health services. The Division of Dental Hygiene programs are designed to educate students toward an appreciation of their role in a professional society, toward an awareness of the ways in which professional activities involve them in a wide range of decisions, and toward expertise in clinical skills. Candidates are selected on the basis of scholarship, achievement, and ability to prepare for leadership positions within the profession. The undergraduate program in dental hygiene focuses on fundamental knowledge and provides a base for graduate education. The graduate program extends and deepens knowledge and practice in a particular area of interest.

The University recognizes that accomplishing the objectives of its dental education program requires the selection of students with superior abilities and academic qualifications,

the acquisition and maintenance of an excellent staff, and the constant pursuit of knowledge through an active and diversified educational and research program. Conscious of these needs, the School selects its students with care and maintains small classes with a favorable ratio of staff to students that permits individual instruction and a stimulating relationship between student and instructor. Through the years the School has had a distinguished staff that has demonstrated accomplishment in educational research and professional leadership, and continues to prepare students for the expanding professional responsibilities of dentistry and the prevention of dental disease.

THE STUDY OF DENTISTRY IN NEW YORK CITY

New York City offers an extremely advantageous setting for the study of dentistry. Many of the most talented dental professionals of the nation and of the world maintain practices in New York City, and there are opportunities for students to visit private offices, clinics, and hospital dental services located throughout the city. In addition, the professional dental resources of the city provide students with exposure to leading authorities in every field of dentistry, many of whom serve on the Faculty of the School.

At the same time, Columbia students have opportunities for an unusually wide choice of cultural and artistic activities for which New York City is well known. Museums, theatres, opera houses, concert halls, and cinemas provide almost unlimited entertainment possibilities. Finally, for those interested in pursuing educational courses in addition to dentistry, Columbia University and numerous other academic centers in the city offer many opportunities for extracurricular learning.

PROGRAMS OF STUDY

D.D.S. Program

The School offers basic science courses to combined classes of dental, medical, and graduate students in the form of a "core" program. During the first year, the dental student takes the required basic science subjects (see page 19) as well as *Interdisciplinary Correlation D5002—Introduction to dentistry*, a review of the history and nature of dentistry and its significance, the means of delivery of dental care, and the kinds of preventive treatment services that modern dentistry provides. In addition, the first-year dental student takes *Orofacial Development D5450-D5451—Oral anatomy and occlusion*, which introduces fundamental concepts of dental morphology and emphasizes the importance of physiologic function to continued oral health.

The second year includes combined basic science courses in neural science, pharmacology, and systemic pathology. This is essentially a dental science year that aims to correlate the application of basic biological information with oral and dental problems that will be faced later in clinical practice. The conceptual basis for the application of modern scientific methods in the recognition, prevention, and treatment of dental disorders is stressed in a range of courses that include cariology, preventive dentistry, human development and genetics, and radiology. Clinical observation, small group teaching, and seminars provide second-year students with a comprehensive view of dentistry, while technical laboratory courses in the clinical dental disciplines provide a foundation for the clinical years. An interdisciplinary course in behavioral science deals with the psychological and psychosocial aspects of dentistry and dental care.

The third year is primarily clinical, with training in all phases of dentistry. Emphasis is on correlation of the various dental disciplines with one another. Lectures stress the correlation of basic sciences with clinical diagnosis and treatment.

Fourth-year students function in small groups or modules, an arrangement designed to prepare students for dental practice. Total patient care is rendered by the individual student supervised by an interdisciplinary professional team. In addition, the fourth-year program contains a Dental Auxiliary Utilization program that trains students in the efficient use of auxiliaries; a Geriatric Dentistry teaching program; and the Treatment of the Handicapped Program. In order to increase awareness of dental treatment needs in underserved communities and population groups, the fourth-year student participates in an extramural clinical clerkship at one of several metropolitan hospitals.

There is an opportunity during the fourth year for students to spend 20 percent of curriculum time in an *elective* program. *Area-of-concentration* programs in endodontics, orthodontics, pedodontics, periodontics, prosthodontics, and biological science that may be substituted for the regular fourth-year curriculum are also available to a few selected highly qualified students.

Throughout the entire curriculum an effort is made to interrelate the different phases of dental learning by means of "correlative" and "combined" clinics in which the various departments and divisions cooperate in the discussion and demonstration of the same or related problems and thus treat the study of dentistry as a unit rather than a series of isolated branches of learning. At the same time an attempt is made to individualize instruction and to place responsibility as far as practicable upon the student for his or her own training. This is accomplished by the division

of classes into modules and review sessions, and by the comprehensive case method of instruction.

Voluntary participation in research projects of the student's choosing and in programs under the guidance of members of the faculty is earnestly encouraged. Members of the William Jarvie Society for Dental Research, the undergraduate research and honor society, undertake individual and team projects under the direction of members of the faculty. Lectures on the principles and practice of research are provided and, in addition, students assist in the execution of studies being pursued by faculty members. A limited number of student research fellowships are available for summer work under the direction of the staff. The scope of student research includes critical reviews of the literature, clinical studies in the techniques of the various disciplines of dentistry, and the evaluation of newer therapeutic agents and dental materials. Work in the basic sciences is encouraged. For a complete description of this program, see *The D.D.S. Program*, below.

Postdoctoral Programs

The School is authorized to grant certificates of training in the specialties of dentistry. Programs for the certificate of training include advanced study in the clinical and basic sciences of dentistry. At present, programs are offered to qualified graduates in dentistry who wish to prepare for specialization in endodontics, orthodontics, pedodontics, periodontics, and prosthodontics. These programs are described in detail under *Postdoctoral Programs in Dental Specialties*.

Continuing Education

Consistent with the belief that a lifetime of learning is necessary for continued competence in the health professions and that dental education

must be a continuum that extends throughout one's professional career, the School of Dental and Oral Surgery maintains a program of short continuing education courses of varying lengths on diverse subjects. These courses are given throughout the academic year and are announced by special brochures, notices in journals, and special mailings.

Courses may range in length from one day to one week or may meet weekly for an entire term. They are designed to enable the practitioner to review and continue his or her educational experience in fields where research and its clinical application present constantly changing concepts of prevention, diagnosis, and treatment. These short courses acquaint the participant with the latest advances in the various fields of dentistry.

A number of specially designated courses among those described under *The D.D.S. Program and Postdoctoral Programs in Dental Specialties* are offered for *audit* as Continuing Education courses. These courses are available for attendance by nonmatriculated practitioners and other professionals through the Division of Continuing Education and are described in periodic Continuing Education brochures and announcements. They are identified in this bulletin by the letter ^A preceding the course number.

FOR VISITORS AND VISITING SCHOLARS TO THE SCHOOL OF DENTAL AND ORAL SURGERY

Qualified exchange students are offered the opportunity for guided study, attendance, and observation of clinical and classroom education under the direction of a faculty member for variable periods of the school year not necessarily corresponding to regular academic intervals. Faculty members of other institutions may be granted visiting scholar privileges, which include auditing clinic and

classroom courses (as approved by the course instructor), attending lectures, and participating (with the approval of the appropriate faculty member) in seminars.

This course is offered without credit. A special fee is determined after consultation with the Director of Continuing Education, depending on the courses to be audited and the length of time to be spent in attendance. No official records of attendance are kept, and no transcript certifying attendance or work undertaken is provided by the Registrar. Arrangements for enrollment are made directly with the Director of Continuing Education.

Programs for Dental Hygienists

Columbia offers a bachelor's and a master's degree in dental hygiene. Candidates for the Bachelor of Science degree under the classification of Program B (for the student with two years of dental hygiene college credit) are admitted in September, January, or July. The program for the M.S. degree provides advanced education in dental hygiene administration, research, and teaching. Please consult *Dental Hygiene Programs* for details of the programs.

Graduate Courses in the Basic Sciences

A limited number of fellowships are available to graduates of accredited dental schools. These fellowships offer opportunity for study in the following basic science departments of the University: anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology. For further information, address the Dean, School of Dental and Oral Surgery, Columbia University, 630 West 168th Street, New York, N.Y. 10032.

Courses Leading to the Degree of Doctor of Philosophy

Graduation from accredited dental schools under the present curriculum of four academic years preceded by three acceptable pre dental college years is considered by the Graduate School of Arts and Sciences of Columbia University to meet the general requirements for admission. There are additional admission requirements in certain departments. A student who is accepted by the Graduate School as a candidate for the degree of Doctor of Philosophy and who holds the Doctor of Dental Surgery degree from Columbia University may, with the consent of the Dean, offer the work done for the professional degree in lieu of points toward the fulfillment of the residence requirement for the academic degree. For further information, see the bulletin of the Graduate School of Arts and Sciences, which can be obtained by writing to the Graduate School of Arts and Sciences Office of Student Affairs, 106 Low Memorial Library, Columbia University, New York, N.Y. 10027.

Combined Program with the School of Public Health

The School of Dental and Oral Surgery and the School of Public Health offer a joint program leading to the Master of Public Health degree in addition to the D.D.S. degree. Admission to the double degree program requires acceptance first by the School of Dental and Oral Surgery, with subsequent application and admission to the School of Public Health. Each degree is awarded independently when the respective requirements have been met. Students can enter the program at any time during their first two and one-half years and have up to two years after dental school graduation to complete the M.P.H. requirements. The joint program comprises

nine academic terms. Tuition for seven of these terms is paid to the School of Dental and Oral Surgery and tuition for the other two terms is payable to the School of Public Health.

This program is designed to graduate students who have the skills of dentistry as well as those of public health. In addition to a foundation in the basic biological sciences and clinical dentistry, students will gain broad insight into the complexities of the evolving health-care system in the United States and develop the skills required for them to assume roles as implementers and leaders within that system. Depending on the chosen area of public health concentration, students may develop special competence in epidemiology, biostatistics, health administration, and the sociomedical sciences.

The joint degree program is a major step in the education of interdisciplinary professionals who can be effective as practitioners and interpreters at the interface between dentistry, other health disciplines, and the health system. Graduates of the program are serving currently in administrative posts, the Public Health Service, general practice residencies, specialty residencies, the Armed Services, and private practice.

For further information, consult the Associate Dean for Academic Affairs, School of Dental and Oral Surgery, Columbia University, 630 West 168th Street, New York, N.Y. 10032, telephone (212) 305-4174.

FACILITIES

The Dental Clinic

The School benefits in many ways from its location in the Columbia-Presbyterian Medical Center and its close cooperation in hospital activities. One of the functions of its clinic is the dental care of patients in the Center hospitals. Students are given a

unique opportunity to gain experience in the diagnosis and care of those cases where a relationship exists between oral and general systemic diseases. The student also learns at first hand the problems of providing dental care for the hospitalized patient. The wards and outpatient departments of the Medical Center give close contact and association with all branches of the health services.

The New Dental School Teaching Center

The School of Dental and Oral Surgery has undergone a complete renovation. A modern dental teaching center with expanded facilities for faculty members, students, and patients was completed in the autumn of 1977. The new facility permits an increase in class size and provides totally integrated clinics for use by undergraduate dental students, postdoctoral dental students, and dental hygiene students.

The Library

The Health Sciences Library, housed in the Julius and Armand Hammer Health Sciences Center, provides a modern and efficient environment for study and research. The four floors occupied by the library offer a comfortable atmosphere conducive to study, including such amenities as individual study carrels, group study and conference rooms, typing rooms, and a leisure reading lounge.

With more than 360,000 volumes and a staff of forty, the library is one of the largest medical center libraries in the United States. It is well able to serve the needs of faculty members, students, and researchers in the various health science disciplines. More than three thousand periodical titles are currently received. An entire floor of the library has been designated as a media center and is equipped with a variety of audiovisual materials. In

addition to traditional reference services, the library offers literature searching on several computerized data bases, including MEDLARS.

Other Columbia libraries, located on the Morningside campus at 116th Street, are open to all students and faculty members who carry Columbia identification cards. The central library is Butler Library; special and departmental collections are housed in other buildings on the campus.

STATEMENT OF NONDISCRIMINATORY POLICIES

The University is required by certain Federal statutes and administrative regulations to publish the following statements:

Consistent with the requirements of Title IX of the Education Amendments of 1972, as amended, and Part 86 of 45 C.F.R., the University does not discriminate on the basis of sex in the conduct or operation of its education programs or activities (including employment therein and admission thereto). Inquiries concerning the application of Title IX and Part 86 of 45 C.F.R. may be referred to Ms. Rosalind S. Fink, the Director of the University's Office of Equal Opportunity and Affirmative Action (305 Low Memorial Library, New York, N.Y. 10027, telephone 212-280-5511), or to the Director, Office for Civil Rights (Region II), 26 Federal Plaza, New York, N.Y. 10007.

Columbia University admits students of any race, color, national and ethnic origin to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. It does not discriminate on the basis of race, color, national and ethnic origin in administration of its educational policies, admissions policies, scholarship and loan programs, and athletic and other University-administered programs.

Consistent with the requirements of Section 504 of the Rehabilitation Act of 1973, as amended, and Part 84 of 45 C.F.R., the University does not discriminate on the basis of handicap in admission or access to, or employment in, its programs and activities. Section 503 of the Rehabilitation Act of 1973 requires affirmative action to employ and advance in employment qualified handicapped workers.

The University in addition desires to call attention to other laws and regulations that protect employees, students, and applicants.

Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination on the basis of race, color, or national origin in programs or activities receiving Federal financial assistance. Title VII of the Civil Rights Act of 1964, as amended, prohibits employment discrimination because of race, color, religion, sex or national origin. Executive Order 11246, as amended, prohibits discrimination in employment because of race, color, religion, sex, or national origin and requires affirmative action to ensure equality of opportunity in all aspects of employment. In addition, New York Human Rights Law, Article 15, Executive Law Section 296 prohibits discrimination in employment because of marital status.

The Equal Pay Act of 1963 prohibits discrimination on the basis of sex in rates of pay. The Age Discrimination in Employment Act of 1967, as amended, prohibits discrimination in employment on the basis of age.

The Columbia University Senate, on December 1, 1978, passed a resolution announcing its general educational policy on discrimination which reaffirms the University's commitment to nondiscriminatory policies in the above-mentioned categories, as well as its policy not to discriminate on the basis of sexual orientation.

Section 402 of the Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, prohibits

job discrimination and requires affirmative action to employ and advance in employment qualified special disabled veterans and veterans of the Vietnam era.

All employees, students, and applicants are protected from coercion, intimidation, interference or discrimination for filing a complaint or assisting in an investigation under any of the foregoing policies and laws.

The University's Office of Equal Opportunity and Affirmative Action has also been designated to coordinate the University's compliance activities under each of the programs referred to above. Any employee who believes that he or she has been denied equal opportunity should contact this Office, which will investigate complaints and counsel employees on

questions relating to equal opportunity and affirmative action.

RESERVATION OF UNIVERSITY RIGHTS

This bulletin is intended for the guidance of persons applying for or considering application for admission to Columbia University and for the guidance of Columbia students and faculty. The bulletin sets forth in general the manner in which the University intends to proceed with respect to the matters set forth herein, but the University reserves the right to depart without notice from the terms of this bulletin. The bulletin is not intended to be and should not be regarded as a contract between the University and any student or other person.

Key to Course Listings

Each course number of the School of Dental and Oral Surgery consists of a capital letter followed by four digits and the term designation.

The *capital letter D* indicates the School of Dental and Oral Surgery.

The level of the course is represented by *the first digit*:

- 3 Dental hygiene undergraduate course
- 5 First-year course for D.D.S. degree candidates
- 6 Second-year course for D.D.S. degree candidates; dental hygiene graduate course
- 7 Third-year course for D.D.S. degree candidates
- 8 Fourth-year course for D.D.S. degree candidates
- 9 Postdoctoral course

Courses in the College of Physicians and Surgeons have four-digit numbers; their suffixes, F and S, designate first- and second-year courses in the College curriculum.

D.D.S. Degree Program

In the D.D.S. degree program, the *second and third digits* indicate the subject area. The letter ^E preceding the course number identifies a course as an elective.

- 00-04 Interdisciplinary correlation
- 05-09 Preventive dentistry
- 10-14 Community health
- 15-19 Dental auxiliary utilization
- 20-29 Endodontics
- 30-34 Operative dentistry
- 35-39 Oral biology
- 40-44 Oral surgery
- 45-49 Orofacial growth and development
- 50-59 Orthodontics
- 60-69 Pediatric Dentistry

- 70-79 Periodontics
- 80-84 Prosthodontics
- 85-89 Behavioral science
- 90-99 Stomatology

Postdoctoral Programs

In the postdoctoral programs, the *second digit* indicates the course category:

- 0 Interdisciplinary correlation
- 2 Endodontics
- 5 Orthodontics
- 6 Pediatric Dentistry
- 7 Periodontics
- 9 Dental science (core and interdepartmental courses)

Dental Hygiene Programs

In the Baccalaureate program, the subject area is indicated by *the second and third digits*:

- 52 Dental science
- 54 Education
- 56 Public health
- 58 Clinical dental hygiene

Points of Course Credit: The number of points of credit that a course carries is given in boldface type in the right margin of the course-title line.

The letter ^R preceding the course number indicates that a course is required.

Term Designations: X, Y, Z

An *x* following the course number indicates the course meets in the autumn term; a *y* indicates the spring term; and a *z* indicates the Summer Session.

Courses for Audit

The letter ^A preceding the course number indicates that a course is available for audit as described in *Programs of Study—Continuing Education*, above.

The D.D.S. Program

Admission Requirements

**Summary of the D.D.S.
Program**

Courses of Instruction

Admission Requirements

Candidates may apply after July 1 during the academic year preceding that for which they seek admission; the deadline for receipt of applications is March 1. Application is made through the American Association of Dental Schools Application Service (AADSAS). Application forms for this service can be obtained from the Office of Admissions, from any other participating dental school, or directly from AADSAS, 1619 Massachusetts Avenue N.W., Washington, D.C. 20036, telephone (202) 667-9433.

Upon submission of the AADSAS application, the applicant must send a check or money order for \$35, made payable to Columbia University, directly to the School of Dental and Oral Surgery. This fee, which covers the cost of processing the application, is required of all prospective students. Those wishing to be considered for a fee waiver should consult with the Office of Admissions and must supply the information necessary to support the waiver request. An application for admission will not be considered until the fee has been paid or until it has been waived by formal action of the admissions authorities of the School. The fee is not refundable and is not credited toward tuition.

Required preparation: three years at an accredited American institution or its equivalent including the following courses (8 points of each): English composition and literature, physics, biology, inorganic chemistry, and organic chemistry. It is not necessary to complete the academic requirements before applying, but all requirements must be completed before registration.

Recommended preparation: additional courses in chemistry, advanced courses in biology, courses in mathematics, foreign languages, sociology, history, and the fine and industrial arts. The admission of a student depends primarily on preparation and intellectual capacity, but it also depends upon judgments of the student's character.

Interviews: A personal interview is required for admission. Because of the large number of applicants, the interview is by invitation only from the Committee on Admissions. Candidates who are chosen for an interview will be notified by mail, and those applicants living on the West Coast will have the option of being interviewed in California. Further instructions will be given to those candidates by the Office of Admissions.

Dental Aptitude Tests: All applicants must take the Dental Aptitude Tests, which are conducted by the Council on Dental Education at various testing centers throughout the United States and Canada. For further information, apply directly to the Division of Educational Measurements, Council on Dental Education of the American Dental Association, 211 East Chicago Avenue, Chicago, Ill. 60611.

Acceptance Fee: After receiving notice of acceptance, the applicant must notify the Committee on Admissions that he or she intends to enroll according to instructions specified in the letter of acceptance. The acceptance fee of \$500 is applied to the applicant's tuition upon registration in the class to which he or she has been admitted. Two hundred dollars is returnable if the applicant notifies the School in writing of withdrawal by the date specified in the letter of admission.

Combined Programs

With Barnard College. Under the "professional option" plan, selected students from Barnard College may receive the Bachelor of Arts degree from Barnard after the completion of three years of undergraduate work at Barnard and the first year in the School of Dental and Oral Surgery. To be eligible for this program, before entering the School the student must have completed 90 points of academic work at Barnard College and all of the prerequisite courses for the Dental School. To be eligible for the Bachelor of Arts degree, she must have completed 120 points, 30 of which may be earned at the Dental School, and she must have completed all of the general and major requirements of Barnard College.

With the School of General Studies. A limited number of highly qualified students may participate in a professional option program with the School of General Studies that reduces the usual time of study for the D.D.S. degree from eight to seven years. Professional option may be exercised after the completion of 94 points (including all courses prescribed for the Bachelor of Science degree), not less than 64 of which must have been taken at Columbia University. The aim of this joint program is to offer a course of study by which students may reduce the time of pre-professional and professional preparation for dentistry as a means of providing earlier access to practice opportunities or postgraduate training.

Each year the School of General Studies nominates a small number of promising students who are in their first year of preprofessional study. Admission to the program and contingent early acceptance into the Dental School are based on the applicant's motivation to enter the field of dentistry, scholastic ability, and personal attributes. Early identification of candidates permits assignment to sum-

mer work-study programs in laboratories of the School of Dental and Oral Surgery and elsewhere on the Health Sciences campus. Part of the work-study experience consists of preprofessional tutorials with selected faculty members as preparation for basic biological sciences and provides the student with an introduction to techniques of scientific problem solving. Final acceptance into the School of Dental and Oral Surgery is conditional upon satisfactory completion of a minimum of two years with the School of General Studies under the professional option, including all courses that are prerequisite to the study of dentistry as well as satisfactory performance on the DAT. For further information, students should consult with the School of General Studies, Office of Admissions, 509 Lewisohn, on the Morningside campus.

In addition, the School of Dental and Oral Surgery also considers applications from highly motivated adult undergraduates in the School of General Studies who have completed at least 60 points toward the bachelor's degree including all courses that are required as prerequisite to the study of dentistry (see page 19). Under this arrangement, students transfer to the School of Dental and Oral Surgery after the end of the second year in the School of General Studies. Opportunities for continuing candidacy for the bachelor's degree from the School of General Studies are possible by arranging a special program that will satisfy the bachelor's degree requirements (see above).

Admission with Advanced Standing

Applications for admission with advanced standing are accepted whenever vacancies exist in the third-year class. Only those applicants who have successfully completed two years of study in an accredited dental school

and who have passed Part I of the National Dental Board Examinations are considered. Graduates of foreign dental schools who hold dental degrees equivalent to the D.D.S. or D.M.D. degree may be considered for admission on an *ad hoc* basis. Evidence of having passed Part I and Part II of the National Board Examination is required. A passing grade on the Test of English as a Foreign Language (TOEFL) is also required. TOEFL

applications and information may be obtained by writing: Test of English as a Foreign Language, Box 899, Princeton, N.J. 08541. The application deadline is December 1 of the year preceding May enrollment. Personal interviews are conducted only at the request of the Committee on Admissions. Eligible candidates will be contacted after the application is complete and has been reviewed by the Committee.

Summary of the D.D.S. Program

Because of revisions in curriculum, the following outline reflects the tentative program for the years 1985-1987.

First Year

- Anatomy and Cell Biology M5101, M5102, M5103
- Biochemistry and Molecular Physics M5101
- Interdisciplinary Correlation D5001-D5002
- Microbiology M5101
- Nutrition M5101
- Orofacial Development D5450-D5451
- Physiology M5101

Second Year

- Anatomy-Physiology M6106
- Behavioral science D6851
- Community health D6101
- Dental auxiliary utilization D7150
- Endodontics D6201
- Interdisciplinary correlation D6010
- Operative dentistry D6300-D6301
- Oral biology D6351-D6352
- Oral and maxillofacial surgery D6401, D6402, D6403
- Orofacial development D6361, D6451-D6452, D6470
- Orthodontics D6501
- Pathology M6103, D6372
- Pediatric dentistry D6651
- Periodontics D6701
- Pharmacology M6102
- Preventive dentistry D6052
- Prosthodontics D6800-D6801
- Radiology D6902, D6903

Third Year

- Community health D7101, D7102, D8121
- Dental auxiliary utilization D7150-D7151
- Endodontics D7201-D7202
- Operative dentistry D7301-D7302
- Oral and maxillofacial surgery D7351, D7401-D7402, D7411, D7421, D7913, D7941-D7942

- Orthodontics D7501-D7502
- Pediatric dentistry D7651-D7652
- Periodontics D7701-D7702
- Preventive dentistry D7051-D7052
- Prosthodontics D7801-D7802, D7830
- Radiology D7931
- Stomatology D7911-D7912, D7921

Fourth Year

- Community health ^ED8111-D8112, *D8121
- *Dental auxiliary utilization D8135-D8136, D8151-D8152
- Endodontics D8201-D8202, ^ED8211-D8212
- ^EInterdisciplinary correlation D8001-D8002
- Operative dentistry D8301-D8302
- *Oral and maxillofacial surgery D8401
- *Orofacial development D8461-D8462 D8470, D8472
- ^EOrthodontics D8511-D8512
- Pediatric dentistry D8451-D8452, ^ED8661-D8662
- Periodontics D8701-D8702, ^ED8711-D8712
- Preventive dentistry D8051-D8052, ^ED8061-D8062
- Prosthodontics D8801-D8802, ^ED8810-D8811, D8830-D8831
- Stomatology D8361-D8362, *D8902 (same course as D7902)

Areas of Concentration

Programs are available to qualified fourth-year students in the following areas: biological sciences, endodontics, orofacial development, orthodontics, pediatric dentistry, periodontics, prosthodontics, and public health. Programs in orthodontics, pediatric dentistry, and prosthodontics are described below; the other programs are individually arranged.

^{*}Not required of students in areas of concentration.

ORTHODONTICS

This is essentially the same as the first-year postdoctoral program in orthodontics. Admission is on a competitive basis with postdoctoral applicants to the Certificate Program in Orthodontics. Instruction in the basic and applied sciences, in related medical subjects, and in the theory and practice of orthodontics is provided by lectures, seminars, laboratory exercises, and clinical practice. Emphasis is on diagnostic procedures and treatment planning and the application of clinical methods best designed to meet the treatment objectives for the individual patient.

Instruction includes the theory and methodology of treatment with various appliances: removable, labiolingual, twin-wire, extraoral forces, edgewise, and the Begg Appliance. The purchase of a kit of instruments and supplies costing approximately \$2,500 is required.

The program is structured as follows:

1. At the beginning of the student's fourth year, the student temporarily discontinues the predoctoral program for the period September through December and attends a number of graduate level courses in the orthodontics program on a full-time basis.
2. Beginning in January, the student resumes the predoctoral program, which has provision for one day of elective time. This elective time is spent taking courses in the postdoctoral orthodontics program.
3. The predoctoral graduation date (that is, the receipt of the D.D.S. degree) depends upon the student's progress. It may be the normal graduation date, or it may be delayed until the satisfactory completion of all predoctoral requirements.
4. Upon successful completion of the predoctoral program and the graduate courses taken, the student enters the postdoctoral orthodontics

program with advanced standing and remains in attendance until all postdoctoral requirements are completed (usually one full calendar year). A written thesis based upon original research under the direction of members of the staff is required. A Certificate of Training in Orthodontics is awarded upon completion. This qualifies the student for membership in the American Association of Orthodontists and to take the certification examination of the American Board of Orthodontics.

PEDIATRIC DENTISTRY

The Division of Pediatric Dentistry offers a special area-of-concentration program during the fourth year. This program begins with an "expanded elective" during the first term for students with an excellent academic and clinical record. At the end of the first term, students who continue to perform with excellence are considered for early graduation by the Class Committee. If approved, students then begin full-time activities as postdoctoral students in the Division of Pediatric Dentistry at the beginning of the second term. Upon satisfactory completion of this special program, the student is eligible to enter the second and final year of the pediatric dentistry postdoctoral training program. The program is approved by the Council on Accreditation and makes the graduate eligible for American Academy of Pediatric Dentistry membership and for taking the American Board of Pedodontics Examination. The second year is extended to meet minimum time requirements for all programs.

The didactic components of the program include pediatric medicine, preventive techniques, developmental psychology, nutrition, postdoctoral pediatric dentistry, clinical seminars, interceptive orthodontics, growth and development, and hospital dentistry protocol.

The clinical portion includes dentistry for handicapped or medically compromised children and adults; special management techniques, including oral sedation, nitrous oxide, and I.M. management, extensive caries control techniques, pulpal therapies, the treatment of abnormalities of occlusion, the identification and treatment of dental developmental disorders, an anesthesiology rotation, and pediatric emergency room exposure.

PROSTHODONTICS

In this program, selected students spend 80 percent of their fourth year in prosthodontics. Selected core post-

doctoral courses are taken in addition to participation in lectures and seminars in prosthodontics. Clinical experience is directed toward in-depth knowledge of periodontal-prosthetic problems. Emphasis is placed on an interdisciplinary approach of prosthodontics with periodontics, endodontics, orthodontics, and oral and maxillofacial surgery. Wherever possible, the student is expected to carry out a research project in some aspect of prosthodontics.

Required Summer Clinics

These sessions are held in June and July.

Courses of Instruction

In the following course listings where the name of the subject or area of studies does not appear before the course number it is understood to be the same as the heading preceding each group of courses.

The University reserves the right to withdraw or modify the courses of instruction or to change instructors as may be necessary.

Anatomy and Cell Biology

M5101F

Microscopic anatomy

Professor Nunez and the staff. First year.

Lectures, conferences, and laboratory dealing with the analysis of biological structure necessary for understanding the function of cells, tissues, and organs.

M5102F-M5102S

Human anatomy

Professor Moss and the staff. First year.

Individual regional dissections of the body, augmented by lectures stressing functional interpretations. Lectures correlate developmental anatomy with gross anatomy.

M5103F

Human development

Professor Pfenninger and the staff. First year.

Lectures on selected topics in human developmental biology.

Anatomy-Physiology M6106F

Neural science

Professors Castellucci, Weiss, and the staff.

Lectures and conferences that provide an integrated understanding of neurophysiology, neuroanatomy, neurochemistry, and behavior.

Behavioral Science

D6851y

Introduction to the patient

The staff. Second year.

Small group seminars designed to help students develop the knowledge, skills, and personal qualities necessary for effective interpersonal communication.

Biochemistry and Molecular Biophysics

M5101

Introductory biochemistry

The staff. First year.

A survey of the chemical constituents of the mammalian cell, their metabolic activities, their interrelationships, and their regulation; structure and function of proteins; energy production in the cell and its role in the syntheses of macromolecules; structure and organization of membrane proteins and receptors; biosynthesis of nucleotides, nucleic acids and protein synthesis; recombinant DNA techniques; regulation of nucleic and protein synthesis.

Community Health

D6101x

Epidemiology and statistics

The staff. Second year.

Lectures and seminars in epidemiology and its role in disease prevention and community health, including programmed instruction in basic biostatistics.

^aD7101y

Health care delivery systems and dental practice

The staff. Third year.

Lectures in organization and financing of health care. Overview of public and private sectors of dental care, with emphasis on third-party insurance, group practice models, peer review and PSRO, manpower, legislation, and projected programs.

D7102y

Community health rotation

The staff. Third year.

Students are required to spend one-half day each term in the field providing dental and oral screenings and health education programs.

^bD8111x-D8112y

Public health community dentistry elective

The staff. Fourth year.

Students assigned to various extramural health centers, hospitals, and institutions to provide care, to identify with various types of health care delivery systems, and

to increase their social sensitivity to various communities and population groups. Tutorial seminars for selected students from the School of Public Health, and for students enrolled in the D.D.S./M.P.H. program, the M.S. degree program in the Division of Dental Hygiene, and fourth-year dental students.

^AD8121y

Ethics, jurisprudence, and forensic dentistry

The staff. Fourth year.

An overview of the laws and regulations governing dental practice, professional responsibility, controls, practice agreements, and the role of forensic dentistry in modern dental practice.

Dental Auxiliary Utilization

D7150x-D7151y

Dental Auxiliary Utilization

Professor Kaplan and the staff. Third year.

Lectures, demonstration, and clinical experience in four-handed, seated dental service delivery; effective utilization of chairside dental assistants; patient and dental team positioning; sequential instrumentation; equipment and space criteria. Coordination of auxiliary utilization techniques with the overall operation of dental facilities; includes an overview of the role of computers in dentistry.

D8135x-D8136y

Advanced practice management elective

Professors Kaplan and Diamond; Dr. Williams, and the staff.

Seminars on management principles with application to a wide variety of dental practice modes. Site visits to selected dental facilities illustrating management concepts, styles, and practical operations. Emphasis is on systems analysis and development of personal practice plans.

D8151x-D8152y

Basic dental practice management

Professors Kadish and Kaplan and the staff. Fourth year.

Lectures and seminars examining the elements of the various dental practice modes. Exploration of strategies for establishing, managing, and building a dental practice. The case study method is used in presenting techniques of financial analysis, modern management concepts, and effective automated data systems.

Endodontics

D6201y

Endodontics theory and technique

Professors Kim, Cantor, Greenberg, Koncny, and the staff. Second year.

Lectures and seminars on the fundamentals of endodontics. Demonstrations and exercises in endodontic technique on extracted teeth.

D7201x-D7202y

Basic clinical endodontics

Professor Kim and the staff. Third year.

Demonstrations and clinical experience in the practice of endodontics.

D8201x-D8202y

Advanced clinical practice

Professor Kim and the staff. Fourth year.

Lectures and clinical experience in advanced problems in endodontic theory and technique.

E8211x-D8212y

Endodontic elective

Professors Greenfield and Levi. Fourth year.

Seminars, demonstrations, and clinical experience in advanced endodontic theory and technique.

Interdisciplinary Correlation

D5001x-D5002y

Introduction to dentistry

Professor Rosenblum and the staff. First year.

Lectures, demonstrations, clinical observation, and experience designed to define the scope of dentistry early in the career of the dental student. Correlation between the preclinical and clinical disciplines is an integral part of the course content.

D6010y

Introduction to clinical practice

Professors Goldman, S.J. Scrivani, and Uccellani. Second year.

Introductory seminars preparing the student for clinical experience.

E8001x-D8002y

Individualized elective

The staff. Fourth year.

An elective program designed to meet the needs of the student in an area appropriate to his or her educational goals as arranged by the Third Year Class Committee.

Microbiology**M5101**

General medical and dental microbiology

The staff. First year.

Conferences.

Nutrition**M5101****Introduction to nutrition**

Professor Winick and the staff. First year.
Lectures covering nutrient deficiencies, nutrient excess, nutrition during special periods of life, and foods in general and therapeutic diets.

Operative Dentistry**D6300x-D6301y****Introductory operative dentistry**

Professors Cain, Brzustowicz, Pandolfo, Kilgannon, R. Sadles, and the staff. Second year.

Lectures and laboratory exercises on the fundamentals of operative dentistry, including the etiology of dental caries and the biological approach to the technical procedures in the restoration of teeth. Periods of clinical observation are an integral part of the course.

D7301x-D7302y**Operative clinical practice**

Professors Cain, Brzustowicz, S. S. Scrivani, R. Sadles, Kilgannon, Kornhaber, and the staff. Third year.

Introduction to the clinical practice of operative dentistry. Lectures, demonstrations, and clinical experience in the recognition of disease and related conditions. Prevention, treatment planning, and restoration to form and function on a comprehensive care basis.

D8301x-D8302y**Advanced clinical practice**

Professors Cain, Brzustowicz, Boyd, Lichtenthal, Low, S. Sadles, S.S. Scrivani, and the staff. Fourth year.

A continuation of *Operative Dentistry*

D7301-D7302, with the addition of seminars in the special problems of operative dentistry; emphasis on total patient care and preparation for clinical board examinations.

Oral Biology**D6351x-D6352y****Cariology-preventive dentistry**

The staff. Second year.

Lectures and seminars on etiology, histopathology, measurement, and prevention of the plaque diseases—caries and periodontal disease—with emphasis on preventive techniques for improving host resistance.

Oral and Maxillofacial Surgery**D6401x****Pain control**

Professor Israel. Second year.

Lectures on the understanding of pain and its control by means of local anesthesia. Emphasis is placed upon the anatomy, physiology, and pharmacology of local anesthesia.

D6402x-D6403y**Introduction to oral and maxillofacial surgery**

Professors Baumash, L. Mandel, Minervini, and Roser. Second year.

Lectures and clinical experience to prepare students for basic oral surgery procedures. The armamentarium, techniques, and complications of exodontia are stressed.

^aD7351y**Functional anatomy of the head and neck**

Professor Loscalzo. Third year.

Lectures on the role of anatomic relationships in the rendering of care to the oral cavity and adjacent structures.

D7401x-D7402y**Basic oral surgery**

Professors L. Mandel, Minervini, Loscalzo, Baumash, and Roser. Third year.

Further discussion on basic oral surgical services, introductory lectures in areas within the full scope of oral and maxillofacial surgery, and clinical experience in delivering ambulatory oral surgery services.

D7411x**Pain control**

Professor Israel. Third year.

Lectures on the various modalities of sedation, analgesia and general anesthesia, and their use in the dental office.

D7421y**Summer externship elective***Professor L. Mandel. Third year.*

Externships of varying length are offered on a voluntary basis during the summer at selected metropolitan hospitals. The student has the opportunity to become involved with all aspects of dentistry as delivered in a hospital environment.

D7941x-D7942y**Medicine***Professors Myers, Roser, and Israel. Third year.*

Discussions, including case presentations with student participation, cover the major systemic diseases and other pertinent medical problems, their impact on the dental patient, and the impact of dental care on the patients with these medical problems.

D8415x-D8416y**Oral and maxillofacial surgery elective***Professors L. Mandel, Minervini, Roser, and the staff. Fourth year.*

Elective course for a limited number of students. An integrated program of advanced clinical and didactic training and experience in oral surgery. Students rotate through the School's oral surgery clinic and the oral surgery services of selected metropolitan hospitals. Seminars in otolaryngology, salivary gland diseases, and the temporomandibular joint.

D8010-D8011**Extramural clinical clerkship***Professor Minervini. Fourth year.*

Six-week assignment of students to remote site delivery settings, i.e., metropolitan hospitals, to increase the student's consciousness of dental manpower needs and opportunities in underserved communities and population groups. To provide an effective clinical experience in the general practice of dentistry at a facility other than the formal school surroundings.

Orofacial Development**D5450x-D5451y****Oral anatomy and occlusion***Professors Fink and Horowitz, and the staff. First year.*

Lectures and laboratory sessions in oral anatomy, dental morphology, phylogeny of the dentition, and dental occlusion.

D6361x**Oral microscopic anatomy and embryology***Professor Moss-Salentijn and the staff. Second year.*

Lectures, conferences, and laboratory on the detailed microscopic anatomy and development of the dental and associated orofacial structures.

D6452x**Human development and genetics***Professor Horowitz. Second year.*

Lectures in patterns of human development, with emphasis on inheritance factors in facial growth, the timing and sequence of eruption, phylogeny of the dentition, and the development of dental occlusion.

D6470**Introduction to the geriatric patient***Professors Tillman and L. Tepper. Second year.*

Lectures on the psychological, social, and financial factors that impact on the older dental patient.

D7470**Introduction to geriatric dentistry***Professors Tillman and L. Tepper. Third year.*

Lectures and seminars on the physiology and psychology of the elderly, including current theoretical and research problems involved in studying the medical, psychosocial, and dental aspects of the aging process.

D8461x-D8462y**Orofacial development elective***Professor Horowitz and the staff. Fourth year.*

An individualized study program in human development, with special emphasis on the dentofacial complex. Current activities of the Division provide an opportunity for experience in several areas, including research design, research projects related to genetic factors in craniofacial deformities and disease, practical application of statistical analytic techniques, clinical observation of various craniofacial birth defect syndromes, and investigation of dental needs in the elderly population.

D8470**Clinical geriatric dentistry**

Professor Tillman and the staff. Fourth year.
 Application of D6470 and D7470 in the clinical setting. Each student is required to prepare and present for class discussion a complete diagnostic and treatment analysis of a geriatric dental patient.

Orthodontics**D6501y-D7501x-D7502y****Principles of orthodontics**

Professor Di Salvo and the staff. Second and third years.

Lectures, seminars, laboratory, and clinic. Orthodontic fundamentals, with special emphasis on prevention and interception of malocclusion by the early recognition and correction of the predisposing factors. Appliances used in preventive, interceptive, and minor corrective orthodontic procedures are constructed in the laboratory and used in the clinic.

E-D8511x-D8512y**Orthodontic elective**

Professor Di Salvo and the staff. Fourth year.

Seminars and clinic participation. A more detailed exposure to the etiology, diagnosis, case analysis, treatment planning, and clinical management of problems of malocclusion.

Pathology**D6103****Systemic Pathology**

The Department of Pathology staff. Second year.

The same course as that given to medical students, including a section on the mechanisms of injury and repair in cells, tissues, and organ systems; lectures and laboratory exercises using clinical case material, gross specimens, and light microscopic studies to elucidate the pathogenesis of findings in disease.

D6372y**Oral pathology**

Professor Blake and the staff. Second year.

Lectures, demonstrations, conferences, and laboratory work on diseases of the oral cavity and contiguous structures, including the jaws, teeth, and soft tissues, and on systemic diseases affecting the oral cavity. Emphasis on clinical manifestations and histopathology of the various diseases.

Pediatric Dentistry**D6651y****Fundamentals of pediatric dentistry**

Professor Davis and the staff. Second year.
 Lectures on morphology and chronology of the primary and mixed dentition, cavity preparation, pulp therapy, stainless-steel crown preparation, and other related clinical procedures. The preclinical laboratory involves basic pediatric dental operative techniques on primary and young permanent teeth and the handling of various restorative materials, including amalgam and adhesive composite systems. At the end of the course, the student is prepared to begin clinical pediatric dentistry.

D7651x-D7652y**Theory and practice of pediatric dentistry**

Professor Davis and the staff. Third year.
 Lectures and seminars on diagnosis and treatment planning for the primary and mixed dentition. Emphasis is placed on consideration of the entire child from psychological, medical, and oral health perspectives. The student learns to provide appropriate preventive measures, patient management, care of trauma, adhesive restorative techniques, space maintenance, and interceptive and preventive orthodontic procedures for children and adolescents. The clinical phase of the course is held once weekly and concentrates on the application of the preceding principles.

D8451x-D8452y**Program for the treatment of the medically compromised patient**

Dr. Myers. Fourth year.

Lectures and clinical experience in treating patients who have various types of handicapping conditions.

D8650**Senior clinical pediatric dentistry**

The staff. Fourth year.

This senior course is a continuation of the clinical phase of D7651x-D7652y. Increased emphasis is placed on development of clinical decision-making ability, behavior management, comprehensive treatment planning, and expeditious delivery of care.

D8661x-D8662y**Pediatric dentistry elective***Dr. Jackson. Fourth year.*

Expansion of the experience of the third-year pediatric dental course with more complex behavioral management and treatment-planning cases. Experience with the handicapped child and with special management aids such as nitrous oxide and other forms of sedation is provided. Occasional case-discussion seminars and involvement with the postgraduate guest lecture series. *One or two half days.*

Periodontics**D6701y****Lectures and clinic***Professors Gottsegen, Kamen, and Schwartz, and the staff. Second year.*

Lectures and seminars in the diagnosis, etiology, and treatment of periodontal diseases. Application of basic biologic sciences to the pathogenesis and treatment of periodontal diseases. Clinical practice in examination and documentation of clinical findings in the periodontal patient; prophylaxis, subgingival scaling and root planing; teaching and motivating patients to perform personal oral hygiene.

D7701x-D7702y**Clinical practice of periodontics***Professors Gottsegen and Schwartz, and the staff. Third year.*

Lectures and seminars on periodontal surgery, occlusal traumatism, occlusal adjustment, specific periodontal diseases and infections, systemic background factors and interrelationships, methods of temporary stabilization of teeth, introduction to treatment planning, and case presentation both in seminar and clinic. Clinical practice in subgingival curettage, simple surgical techniques, occlusal adjustment by selective grinding, and temporary stabilization.

D8701x-D8702y**Advanced periodontics***Professors Gottsegen and Schwartz, and the staff. Fourth year.*

Clinical experience. A continuation of *Periodontics D7702*. Guest-lectured seminars tracing the historical development of treatment methods, advanced surgical techniques, special therapeutic problems, fixed and permanent splinting, restorative dentistry for the periodontally involved

dentition, and information on current research trends and new knowledge in periodontics. Emphasis on the clinical management of more complex cases than in the third year.

E8711x-D8712y**Periodontics elective***Professors Gottsegen and Lubarr, and the staff. Fourth year.*

One seminar and choice of one or two clinic sessions a week. Students participate in seminars with subject material researched through literature review and critical analysis. Clinical experience is directed toward enlarging and enhancing the usual four-year periodontics program through the assignment of difficult and complex cases of diagnosis, treatment planning, and therapeutic management. Opportunity and encouragement given for research.

Pharmacology**M6102****General and special pharmacology***Professor Kahn and the staff. Second year.*

A rigorous course which features lectures, laboratories, and discussions dealing with the basic principles of pharmacology and with traditional drugs used in dental and medical practice. A thorough understanding of the material presented adds interest to the student's future dental practice and helps the student to render a more effective service to patients.

Physiology**Anatomy-Physiology M6106F****Neural science***Professors Castellucci, Weiss, and the staff. Lectures and conferences that provide an integrated understanding of neurophysiology, neuroanatomy, neurochemistry, and behavior.***M5101S****Human physiology***Professor Nocenti and the staff. First year.*

Lectures, conferences, demonstrations, and laboratory. Specific cells, tissues, and organs of the human body and the physical and chemical processes that underlie those functions are covered.

Preventive Dentistry**D6052y****Techniques of preventive dentistry***The staff. Second year.*

Lectures, seminars, and clinical exercises on the procedures of preventive dentistry.

D7051x-D7052y**Practice of clinical preventive dentistry***The staff. Third year.*

Clinical training in the procedures of preventive dentistry, with emphasis on the plaque diseases.

D8051x-D8052y**Practice of clinical preventive dentistry***The staff. Fourth year.*

Integrating preventive dentistry into total patient care.

^ED8061x-D8062y**Preventive dentistry research elective***The staff. Fourth year.*

Seminars and research project.

Prosthodontics**D6800x-D6801y****Precalinary prosthodontics***Professors Phillips and M. Tepper, and the staff. Second year.*

Lectures, demonstrations, and audiovisual aids on the theory and procedures in the design and fabrication of fixed, removable, and complete prostheses. In preparation for the clinical performance of prosthodontics, as many procedures as possible are simulated by the students on models in the laboratory.

D7801x-D7802y**Core clinical prosthodontics***Professor Lucca and the staff. Third year.*

Lectures, demonstrations, and clinical experience in the biological principles and practice of the more simple prostheses in all phases of prosthodontics—fixed and removable. In the latter part of the year, lectures are given by staff and guests on different concepts of occlusion and other schools of thought on various aspects of prosthodontics including maxillofacial prosthesis and implant procedures.

D7830x**Dental materials***Professor Rosenblum. Third year.*

A lecture series covering the important chemical and physical properties of dental materials, and the effect of improper manipulation on those physical properties.

D8801x-D8802y**Advanced prosthodontics***Professor Lucca and the staff. Fourth year.*

Advanced clinical experience in the biologic principles and practice of fixed and removable prosthesis. Wherever possible, small seminars are conducted utilizing student cases for presentation and learning experiences.

^ED8810x-D8811y**Prosthodontic electives***Professors Goldin, Scarola, Budasoff, Freedman, Bacharach, Epstein, and J. Abelson, and the staff. Fourth year.*

Lectures, demonstrations, seminars, and clinical experience in cases presenting unusually diverse clinical problems. Emphasis on developing skills with techniques that are not emphasized in the general prosthodontic courses. Several electives are offered each year emphasizing different aspects of prosthodontic care.

Wherever possible, the student is expected to carry out a research project in some aspect of prosthodontics.

D8830x**Selection of dental materials***Professor Rosenblum. Fourth year.*

A lecture series dealing with new developments in dental materials and the interpretation of new product literature as an aid to selecting new dental products for clinical use.

PROSTHODONTICS AREA OF CONCENTRATIONFor a general description of the program, see *Summary of the D.D.S. Program—Areas of Concentration*. New courses in prosthodontics are described below. In addition, core courses are selected from the following, described in full under the appropriate designation: *Dental Science* *D9908—Clinical stomatology conferences; D9915—Psychiatry and psychosomatic medicine, and their interrelationships with dentistry; Operative*

Dentistry D8301-D8302—Advanced clinical practice; Oral Surgery D8401—Extramural clinical clerkship; Periodontics D8701-D8702—Advanced periodontics, D9723—Treatment planning in periodontics, D9726—Occlusion, function of the jaws and temporomandibular joint, with special reference to periodontics; Preventive Dentistry D8051-D8052—Practice of clinical preventive dentistry; Prosthodontics D8810—Prosthodontic elective, and D8830—Selection of dental materials.

D8835y

Effects of restorative materials and procedures on dental pulp

Professors Grayson and Kim. Fourth year.
Several lectures on circulation in the pulp and results of research carried out at School of Dental and Oral Surgery. Review of literature on this subject is covered in seminar form.

D8840x-D8841y

Prosthodontic concentration clinic

Professor Hutton and the staff. Fourth year.
Faculty members and students are on a one-to-three basis for the 21 hours a week spent in this clinic throughout the year. Chairside treatment planning and treatment of extensive complicated periodontal-prosthodontic cases is the basic emphasis of this clinic. Each student has the opportunity of reviewing all other cases being treated.

D8842x-D8843y

Prosthodontic literature review

Professor Prince. Fourth year.

Selected articles in all phases of fixed prosthodontics are reviewed and discussed in seminar.

D8844x-D8845y

Overview of periodontics for the prosthodontist

Professors Gottsegen, Winter, and the staff. Fourth year.

Weekly lecture and seminar covering periodontics, from the preparation of the mouth and surgical procedure to follow up and home care.

D8846x-D8847y

Prosthodontic minor tooth movement

Professor Gieger. Fourth year.

Seminar on practical application of orthodontics to reconstruction procedures.

D8850x-D8851y

Prosthodontic-periodontal treatment planning seminar

Professor Hutton. Fourth year.

Each case is presented by both disciplines and discussed in detail from both perspectives.

D8860x-D8861y

Occlusion in the practice of prosthodontic dentistry

Professor Grayson. Fourth year.

Seminar sessions are divided for discussion of various occlusal concepts. Selected articles are presented by the student and the group discusses the concepts.

Radiology

D6902x-D6903y

Dental radiology

The dental radiology staff and guest lecturers. Second year.

Lectures on the pertinent basic concepts of dental radiology and their applications in clinical practice. Introduction to radiographic techniques and the fundamentals of radiation safety. Exercises in dental radiographic interpretation.

D7931y

Dental radiology clinic

The dental radiology staff. Third year.

Clinical practice in intraoral and extraoral radiography. Demonstrations of selected extraoral techniques.

Stomatology

D7911x-D7912y

Clinical oral pathology and oral diagnosis clinic

Professor D. J. Zegarelli and the staff. Third year.

A two-part clinical and didactic course. The didactic portion is devoted to the clinical, radiographic, and microscopic aspects of oral pathology. All common, uncommon, and many rare disease entities are covered in detail. Pharmacotherapeutics of certain disease entities are described where necessary. Clinical stomatology conferences are held to illustrate particular disease entities. The clinical portion is composed of rotations through the oral diagnosis clinic to help students develop skills in medical history-taking and analysis, soft tissue and radiographic examination.

tions, dental charting and treatment planning, and dental-emergency diagnosis. Treatment planning skills are emphasized and include knowledge of all clinical disciplines of dentistry.

D7913y

Facial pain and temporomandibular joint disease

Professors Syrop and L. Mandel. Third year. Discussions include the various aspects of facial pain, its diagnosis and treatment. Emphasis is placed on temporomandibular joint dysfunction and disease.

D7921y

Clinical cancer training

Professor Kutscher and the staff. Third year. Lectures and clinical experience in the diagnosis and treatment of tumors of the head, face, and neck. The student is rotated for one week through the otolaryngology, radiotherapy, combined tumor, and maxillofacial prosthesis clinics. Psychosocial issues are emphasized.

^aD8961x-D8962y

Facial pain elective

Professor L. Mandel and the staff. Fourth year.

Individual training in the diagnosis and treatment of facial pain and temporomandibular joint disorders, with clinical supervision.

Postdoctoral Programs in Dental Specialties

Admission Requirements

Summary of Programs

Courses of Instruction

**Fellowship and Postdoctoral
Programs in Basic Sciences**

Admission Requirements

To be admitted to any program, an applicant must be licensed to practice dentistry. International students may be required to demonstrate sufficient knowledge of English and to pass a clinical competence examination. It is required that all students who have received their dental education at schools outside of the U.S.A., Canada, and England submit scores of achievement in the "Test of English as a Foreign Language" (TOEFL) examination as a part of their application.

When to apply: before November 1 for admission in the following September. The Postdoctoral Admissions Committee gives preference to applicants who present evidence of one of the following qualifications: (a) two years of experience in dental practice (service as a dental officer in the federal services fulfills this qualification), (b) completion of a residency of twelve months or more, or (c) completion of at least twelve months of university graduate or postgraduate work in dentistry, a basic science, or an allied field.

Admission procedure: write to the Postdoctoral Admissions Office, School of Dental and Oral Surgery, 630 West 168th Street, New York, N.Y. 10032, for an application form, which must be completed and returned. The completed form should be accompanied by the application fee of \$45. This fee is required of all prospective students. Payment may be waived, but only in certain individual cases of extreme hardship. Those

wishing to be considered for a fee waiver on this basis should consult with the Postdoctoral Admissions Committee and should supply the information necessary to support the waiver request. An application for admission cannot be considered until the fee has been paid or until it has been waived by formal action of the admissions authorities of the School. The fee is not refundable and is not credited toward tuition. As requested in the form, the applicant should ask each of the colleges or universities attended—for both preprofessional and professional studies—to send official transcripts of the record directly to the director of the postgraduate division to which the applicant is seeking admission. Official proof of current licensure should also be submitted.

Personal interview: if practicable, the Postdoctoral Admissions Committee may ask an applicant to come to the School for a personal interview.

Acceptance fee: within two weeks after receiving notice of acceptance, the applicant must notify the Committee that he or she intends to enroll and must send a check or money order for the amount specified in the acceptance letter, made payable to Columbia University. This acceptance fee is credited to the applicant's tuition upon registration in the class to which he or she has been admitted. If the applicant does not register in that class, the acceptance fee will be retained by the University.

Summary of Postdoctoral Programs

These programs lead to a board-qualifying certificate of training and are based on the need for specially qualified practitioners of dentistry. They provide opportunities for advanced study in special fields. The education received may be credited toward specialization.

The University reserves the right to withdraw or modify the courses of instruction or to change the instructors at any time.

PROGRAM IN ENDODONTICS

This is a two-year, full-time, board-qualifying program designed to prepare dentists for specialized practice and teaching in endodontics. Instruction includes lectures, seminars, and laboratory courses in the basic sciences as well as in endodontics and related areas of dentistry. Clinical demonstrations, instruction, and experience in all phases and techniques of operative endodontics—conservative and surgical—are provided. Participants also receive experience in undergraduate endodontic teaching and in research.

Complete descriptions of the following courses are given under *Courses of Instruction*, below.

First Year

AUTUMN TERM

- | | |
|-------|------------------------------------|
| D9200 | Theory and practice of endodontics |
| D9204 | Endodontic anatomy and technic |
| D9205 | Clinical practice in endodontics |
| D9210 | Review of endodontic literature |
| D9214 | Pain seminars |
| D9217 | Surgical endodontics |

- | | |
|--------|--|
| D9227 | Guest lecture series |
| D9900 | Research methodology |
| D9905 | Oral medicine and clinical oral pathology |
| D9911x | Functional anatomy of the head and neck |
| D9912 | Anatomy of the head and neck |
| D9913 | Radiology |
| D9915 | Psychiatry and psychosomatic medicine, and their interrelationships with dentistry |
| D9920 | Histology and embryology |
| D9921 | Statistics |
| D9922 | Physiology |
| D9951 | Periodontal wound healing seminars |
| D9965 | Microbiology and immunology |

SPRING TERM

D9201, D9206, D9211, D9218, and D9228 are offered in the spring term of the first year. They are continuations of courses offered in the autumn term.

- | | |
|-------|--------------------------------------|
| D9215 | Endodontic-periodontic relationships |
| D9901 | Cariology |

SUMMER SESSION

Endodontics D9209 Clinical practice in endodontics

Second Year

AUTUMN TERM

D9202, D9207, D9212, D9219, and D9229 are offered in the second year. They are continuations of courses offered in the first year.

- | | |
|-------|---------------|
| D9214 | Pain seminars |
| D9216 | Pulp biology |
| D9221 | Thesis |

SPRING TERM

D9203, D9208, D9213, D9220, D9222, and D9230 are offered in the spring term. They are continuations of courses offered in the autumn term.

D9923 Pharmacotherapeutics

PROGRAM IN ORTHODONTICS

This is a two-year, full-time program designed to meet the educational requirements of the American Board of Orthodontics and to prepare dentists for specialization in orthodontics. Instruction in the basic and applied sciences, in related medical subjects, and in theory and practice of orthodontics is provided by lectures, seminars, laboratory exercises, and clinical practice. Emphasis is on diagnostic procedures and treatment planning and the application of clinical methods best designed to meet the treatment objectives for the individual patient.

Instruction includes the theory and practice of treatment with various appliances: removable, labiolingual, twin-wire, extraoral forces, edgewise, and the Begg Appliance. Satisfactory completion of clinical training and preparation of a thesis based upon original research, under the direction of members of the orthodontic staff, are required.

See *Academic Calendar* for registration dates and for dates on which classes begin. For complete descriptions of courses see *Courses of Instruction*, below.

First Year**AUTUMN TERM**

- D9500 Orthodontic technic**
D9501 Clinical orthodontic practice
D9507 Biomechanics

- D9515 Orthodontic literature review**
D9521 Theory and practice of orthodontics
D9900 Research methodology
D9911 Functional anatomy of the head and neck
D9912 Anatomy of the head and neck
D9913 Radiology
D9920 Histology and embryology
D9921 Statistics
D9922 Physiology
D9956 Introduction to orthodontics
D9957 Cephalometrics, growth and development
D9958 Orthodontic diagnosis and treatment planning
D9960 Maxillofacial follow-up clinic
D9966 Orthognathic surgery conference

SPRING TERM

D9502, D9516, D9522, D9959, D9961, and D9967 are offered in the spring term. They are continuations of courses offered in the autumn term.

- D9519 Dental materials**
D9525 Thesis research
D9901 Cariology
D9903 Orofacial growth and human development

SUMMER SESSION

D9503 and D9526 are offered in the Summer Session. They are continuations of courses offered in the spring term.

Second Year**AUTUMN TERM**

D9504 and D9527 are offered in the autumn term and are continuations of courses offered in the Summer Session.

- D9509 Orthodontic diagnosis and treatment planning**

- D9517 Orthodontic literature review
 D9523 Theory and practice of orthodontics
 D9530 Theory and practice of periodontics
 D9904 Craniofacial anomalies
 D9905 Oral medicine and clinical oral pathology
 D9915 Psychiatry and psychosomatic medicine, and their interrelationship with dentistry
 D9916 Temporomandibular joint disorders
 D9917 Temporomandibular joint dysfunction and myofascial pain dysfunction problems
 D9970 Maxillofacial follow-up clinic
 D9968 Orthognathic surgery conference

SPRING TERM

D9505, D9510, D9518, D9524, D9528, D9918, D9961, D9969, and D9971 are offered in the spring term. They are continuations of courses offered in the autumn term.

- D9508 Practice management in orthodontics
 D9513 Public health aspects of orthodontics
 D9514 Oral and maxillofacial surgery related to orthodontics
 D9520 The cleft-palate patient
 D9902 Pediatrics related to dentistry
 D9955 Speech pathology and therapy

SUMMER SESSION

D9506 and D9529 are offered in the Summer Session. They are continuations of courses offered in the spring term.

PROGRAM IN PEDIATRIC DENTISTRY

The two-year, full-time program leading to a Certification of Training in Pedodontics approved by the Council of Dental Education includes courses in basic sciences, developmental psychology, and dental and medical courses in various aspects of pediatric dentistry and care for the handicapped patient.

During the two years, emphasis is on clinical practice, using behavior modification and training in analgesia, I.V. sedation, and operating room procedures. Clinical aspects of pediatric dentistry are stressed in conjunction with preventive dentistry concepts and growth and development of the child. An integral part of the program is a literature review of classical readings in pediatric dentistry and case presentations. Orthodontic techniques are stressed. The course facilitates the taking of the examinations of the American Board of Pedodontics. The student conducts a pediatric dental investigation that is then presented in the form of a thesis. Undergraduate teaching rotation is required in the second year.

A United Cerebral Palsy Clinical Fellowship is available during the second year of the program to students who demonstrate superior ability. The fellowship carries an annual stipend and is sponsored by the United Cerebral Palsy Research & Education Foundation, Inc.

Descriptions of the following courses are given under *Courses of Instruction*.

First Year

AUTUMN TERM

- D9600 Pediatric dental theory: technique and practice
 D9602 Clinical practice in pediatric dentistry

D9606	Anesthesiology and operating room protocol (rotation)	D9635	Methodology in preventive dentistry
D9610	Care of the neurologically handicapped child at Blythedale Children's Hospital (rotation)	D9652	Dental materials
D9620	Preventive and interceptive orthodontic clinic	D9902	Pediatrics related to dentistry
D9624	Clinic for the handicapped child	D9908	Clinical stomatology conferences
D9631	Thesis	D9641	Nutrition
D9636	Pediatric dentistry guest lecture seminar series	D9649	Anesthesiology and related pharmacotherapeutic measures
D9640	Orthodontic technique laboratory		
D9643	Review of pediatric dental literature		
D9650	Undergraduate pediatric dental instruction preceptorship (rotation)		
D9911x	Functional anatomy of the head and neck	D9604	Clinical practice in pediatric dentistry
D9900	Research methodology	D9608	Anesthesia and operating room protocol
D9904	Craniofacial anomalies	D9612	Care of the neurologically handicapped child at Blythedale Children's Hospital (rotation)
D9905	Oral medicine and clinical oral pathology	D9626	Clinic for the handicapped
D9911	Functional anatomy of the head and neck	D9628	Preventive and interceptive orthodontic clinic
D9915	Psychiatry and psychosomatic medicine, and their interrelationships with dentistry	D9630	Psychosedation clinic
D9920	Histology and embryology	D9633	Thesis
D9921	Statistics	D9638	Pediatric dentistry guest lecture seminar series
D9923	Pharmacotherapeutics	D9645	Review of pediatric dental literature
D9956	Introduction to orthodontics	D9653	Undergraduate pediatric dentistry instruction preceptorship (rotation)
D9957	Cephalometrics: growth and development		
SPRING TERM			
<i>D9601, D9603, D9607, D9611, D9615, D9621, D9625, D9632, D9637, D9644, D9651, D9656, D9658, and D9906 are offered in the spring term. They are continuations of courses offered in the autumn term.</i>		<i>D9605, D9609, D9613, D9617, D9619, D9623, D9627, D9629, D9634, D9639, D9646, D9654, and D9660 are offered in the spring term. They are a continuation of courses offered in the autumn term.</i>	
		D9642	Child developmental psychology
		D9647	Neurological conditions
		D9649	Anesthesiology and related pharmacotherapeutic measures
		D9910	Clinical stomatology conferences

PROGRAM IN PERIODONTICS

The two-year, full-time program in periodontics prepares the dentist for specialized service, either in private practice or in academics. Although it is strongly clinical in emphasis, the program encourages participation in research and affords the interested student the opportunity for more intensive research training. The program consists of courses in the theory and practice of periodontics and in the basic biologic and related medical sciences. Many schools of thought and training backgrounds are represented in the Faculty. Thus, a variety of therapeutic approaches to clinical problems is offered. A scientific approach to a problem in an atmosphere of intellectual inquiry is nurtured, and the student is encouraged to apply fundamental biological knowledge and judgment to clinical problems. Students are also given an opportunity to assist in clinical instruction of undergraduate dental students. This program is accredited as meeting the educational requirements for candidacy for the American Board of Periodontology. Full credit is given for all courses the student completes even though he or she does not continue into the second year of advanced study.

Complete descriptions of the following courses are given under *Courses of Instruction*, below.

First Year

AUTUMN TERM

- | | |
|-------|--|
| D9700 | Clinical practice in periodontics |
| D9704 | Seminars in periodontics and literature review |
| D9708 | Seminars in periodontics: periodontal therapy |
| D9720 | Treatment planning in periodontics |

D9724	Minor tooth movement in periodontics
D9727	Histology and histopathology of periodontal structures
D9900	Research methodology
D9905	Oral medicine and clinical oral pathology
D9911x	Functional anatomy of the head and neck
D9912	Anatomy of the head and neck
D9913	Radiology
D9915	Psychiatry and psychosomatic medicine, and their interrelationships with dentistry
D9916	Temporomandibular joint disorders
D9920	Histology and embryology
D9921	Statistics
D9922	Physiology
D9951	Periodontal wound healing seminars
D9962	Seminars in periodontics: plaque, calculus, microbiology, and immunology
D9965	Microbiology and immunology

SPRING TERM

D9701, D9705, D9709, D9721, D9728, D9952, and D9963 are offered in the spring term. They are continuations of courses offered in the autumn term.

D9713	Periodontal surgical conference
D9726	Occlusion, function of the jaws and temporomandibular joint, with special reference to periodontics
D9901	Cariology
D9908	Clinical stomatology conferences
D9923	Pharmacotherapeutics

Second Year**AUTUMN TERM**

D9702, D9706, D9710, D9714, D9722, and D9953 are offered in the second year. They are continuations of courses offered in the first year.

- D9716 Seminars in periodontics:
journal club
- D9718 Seminars in periodontics:
the social science and cul-
tural background of health
care, dentistry, and peri-
odontics
- D9729 Restorative dentistry related
to periodontics

SPRING TERM

*D9703, D9707, D9711, D9717,
D9719, D9723, D9730, and D9954*
are offered in the spring term. They
are continuations of courses offered
in the autumn term.

- D9731 Practice management in
periodontics
- D9910 Clinical stomatology con-
ferences
- D9923 Pharmacotherapeutics
Anesthesiology M7201 Clinical
clerkship in anesthesiology

Courses of Instruction

In the following course listings where the name of the subject or area of studies does not appear before the course number it is understood to be the same as the heading preceding each group of courses.

The University reserves the right to withdraw or modify the courses of instruction or to change instructors as may be necessary.

Dental Science (Core Courses)

D9900x

Research methodology

Professor Fine and the staff.

A general consideration of the philosophy and methodology of basic and applied research, including a discussion of the art of scientific investigation, the laws and ethics of human experimentation, potential areas of research in the basic sciences and clinical dentistry, the use of the library, the role of statistics, techniques of clinical research, writing for the scientific literature, animal care, and funding of projects. *One two-hour lecture a week.*

^D9901y

Cariology

Professor I. Mandel.

Lectures in the etiology and histopathology of dental caries, including recent advances in caries prophylaxis. *Seven lecture hours.*

D9902y

Pediatrics related to dentistry

The Department of Pediatrics staff.

A synopsis of pediatrics. Certain peculiarities of growing children of significance in dentistry. The basic concepts and practical aspects of psychological care of children. *One two-hour and one one-hour demonstration a week.*

^D9903y

Human development

Professor Horowitz.

Lectures on childhood and adolescent growth: development of the dentition; hereditary and environmental influences on growth; craniofacial malformations; and prediction of facial growth. *Six lecture hours.*

D9904x

Craniofacial anomalies

Professor Horowitz.

Discussion of various craniofacial anomalies, with emphasis on etiology, morphology, development, and clinical management. *Eight seminar hours.*

^D9905x

Oral medicine and clinical oral pathology

Professor D. J. Zegarelli and the staff.

A comprehensive description and discussion of the diseases of the mouth, jaws, and related structures. Emphasis is on clinical, radiographic, and histologic differential diagnosis. *One lecture a week for sixteen weeks.*

^D9911x

Functional anatomy of the head and neck

Professor Moss.

A concise review of the functional interrelations and their dynamic significance. Pertinent clinical topics are analyzed from this viewpoint. *One two-hour session a week.*

D9912x

Anatomy of the head and neck

Professor Ely.

Lectures and dissection. *Three hours a week for sixteen weeks.*

D9913x

Radiology

The dental radiology staff.

The principles of dental x-ray technique, with emphasis on lateral, anteroposterior, sinus, and temporomandibular joint techniques. *Six hours.*

^D9915x

Psychiatry and psychosomatic medicine, and their interrelationships with dentistry

Professor Lefer.

Basic concepts of psychodynamics, psychopathology, and psychosomatic medicine presented with clinical material showing their synthesis with dentistry. *Eleven two-hour lectures.*

D9916x**Temporomandibular joint disorders***Professor L. Mandel and the staff.*

Lectures, discussions, and demonstrations on the diagnosis and treatment of temporomandibular joint disorders. Includes a study of the clinical physiology and pathology of facial pain, and the relationship between systemic diseases and facial pain syndromes. Discussion of current pain research. *Ten one-hour lectures with demonstrations.*

D9917x-D9918y**Temporomandibular joint dysfunction and myofascial pain dysfunction problems***Professor L. Mandel and the staff.*

A review of skeletal mechanics of the temporomandibular joint and masticatory musculature in its relations to the head and shoulder girdle. The diagnosis of temporomandibular joint pain in terms of muscle spasm and aberration from normal occlusion. *Two hours of seminar and clinic each month.*

D9920x**Histology and embryology***Professor Moss-Salentijn.*

A survey of recent concepts in orofacial development, cranial morphogenesis, and the histology of dental and periodontal tissues. *Five two-hour lectures.*

D9921x**Statistics***The staff.*

A review of fundamental principles in statistics, with emphasis on the interpretation of dental statistics. Some attention to current concepts of caries etiology and control. *Nine one-hour lectures.*

D9922x**Physiology***Professors Di Salvo and Kim.*

A review of physiological principles underlying certain oral functions, with special emphasis on sensory, motor, and secretory activity. *One lecture hour a week.*

^aD9923y**Pharmacotherapeutics***The staff.*

Lectures on the application of pharmacologic principles of therapeutics in dental practice. *Eleven one-hour lectures.*

Anesthesiology M7201**Clinical clerkship in anesthesiology***Dr. Bendixen and the staff at the Presbyterian Hospital.*

A clerkship that provides training in preanesthetic evaluation, intraoperative management and monitoring, and postoperative recovery room and intensive care of surgical patients. Basic and advanced cardiac life support are incorporated into the curriculum and increase the student's capability in recognizing and initiating appropriate therapy in acute problems which lead to respiratory and/or circulatory arrest. The student becomes familiar with the role of the anesthesiologist in the operating room, in the intensive care unit, and as a respiratory therapy consultant.

Dental Science (Interdepartmental Courses)**D9951x-D9952y, D9953x-D9954y****Periodontal wound healing seminars***Professor Morris.*

The basic principles of wound healing are applied to the special problems of repair presented to dental and periodontal structures. These tissues are studied as they react to the various methods of therapy. *One one-hour seminar a week.*

D9955y**Speech pathology and therapy***Professor Mysak.*

Language and speech development in children, and speech pathology and therapy in the patient with oral impairment. *Four two-hour lectures.*

D9956x**Introduction to orthodontics***Professor Nahoum and the staff.*

Consists of a series of lectures that survey the entire field of orthodontics. Provides the student with background information that is required in order to begin treating patients and prepares the student for a more detailed study of laboratory and clinical procedures. *Thirty lecture hours.*

D9957x**Cephalometrics: growth and development***Professor Nahoum.*

A survey of growth and development of the dentition and face, including the theory and practice of taking standardized head roentgenograms utilizing a cephalostat, laboratory procedure in the methods of making tracings, and the clinical evaluation of headfilms. *Ten one-hour lectures and four three-hour laboratory sessions.*

D9958x-D9959y**Orthodontic diagnosis and treatment planning***Professor Di Salvo and the staff.**One one-hour seminar a week.***D9960x-D9961y, D9970x-D9971y****Maxillofacial follow-up clinic***Professor Janecka.*

Case discussions involving diagnosis and treatment of complex maxillofacial problems. *Two-hour sessions of clinic-seminar each month.*

D9962x-D9963y**Seminars in periodontics: plaque, calculus, microbiology, and immunology***Professors Oshrain and Fine, and the staff.*

Intensive and critical review of the literature relating to formation, structure, chemistry, and bacteriology of plaque and calculus; the nature of salivary and crevicular fluids; leading to and covering the microbiology and immunology of periodontal disease. *One and one-half hours a week for twenty weeks. D9963y runs until March.*

D9965x**Microbiology and immunology***Professors Kamen and Fine.*

Principles of bacteriology and immunology, with particular reference to applications in aseptic procedures and the control of infection in endodontics and periodontics; the relationships between the immune and inflammatory responses are stressed with particular references to clinical endodontics and periodontics. *Lectures: thirty-two hours.*

D9966x-D9967y, D9968x-D9969y**Orthognathic surgery conferences***Professors Cangialosi and Roser.*

Seminars in diagnosis and treatment planning of those cases that exhibit complex dento-facial dysplasias requiring both surgical and orthodontic treatment for their resolution. Cases are presented by students and staff of the Divisions of Oral Surgery and Orthodontics. *One one-hour seminar each month.*

Endodontics**D9200x-D9201y, D9202x-D9203y****Theory and practice of endodontics***Professors Leavitt and Kim.*

Lectures and seminars on past and current theory in endodontics and its relation to modern endodontic practice. Guest lecturers will speak on current research developments in the field of endodontics or related disciplines. *Ninety hours.*

D9204x**Anatomy and technic of endodontics***Professors Cantor, Greenberg, and Konecky.*

Lectures and laboratory sessions on the anatomy of roots, pulp chambers, and root canals. Lectures and demonstrations on endodontic armamentarium and materials. Lectures, demonstrations, and technic sessions on the chemomechanical preparation and filling of canals of extracted teeth. *Forty-five hours.*

D9205x-D9206y, D9207x-D9208y,**D9209z****Clinical practice in endodontics***The staff.*

Supervised clinical experience in all phases of operative endodontics. During the second year, instruction and experience teaching undergraduate clinical endodontics is included. *Average of 140 hours a term.*

D9210x-D9211y, D9212x-D9213y**Review of endodontic literature***Professor Lund.*

Intensive discussion of past and current literature in endodontic and related fields. Reports by students on reading assignments. *One hundred ninety hours.*

D9214y**Pain seminars***Professor Bilotto.*

All aspects of pain are discussed from the endodontic viewpoint.

D9215y**Endodontic-periodontic relationships***Professor Leavitt.*

The theory and treatment of combined endodontic-periodontic problems. *Ten seminar hours.*

D9216y**Pulp biology***Professors Kim and Bilotto.*

Normal and pathological pulps. Biological background for pulpal injury, inflammation, and repair. *Sixteen two-hour sessions and demonstrations.*

D9217x-D9218y, D9219x-D9220y**Surgical endodontics***Professor Kim and the staff.*

Lectures, demonstrations, and clinical experience in problems requiring combined endodontic and surgical treatment. *Lecture: twenty-six hours. Clinic: seventy-eight hours.*

D9221x-D9222y**Thesis***Professor Kim and the staff.*

The student conducts an investigation dealing with a subject of the student's choice and approved by the program director concerned. The results of the investigation must be presented in the form of a thesis which should be completed one month before the end of the final term.

D9227x-D9228y, D9229x-D9230y**Guest lecture series**

Prominent clinicians and researchers are invited to lecture or conduct seminars in the areas of late advances in endodontics theory, practice, or research.

Orthodontics**D9500x****Orthodontic technic***Professor Di Salvo and the staff.*

Intensive technical instruction and lectures in the assembling and manipulation on typodonts of removable, labiolingual, edgewise, extraoral forces, twinwire and Begg appliances, retainers, and bite plates. *Six three-hour sessions a week for eleven weeks.*

D9501x-D9502y and D9503z, and**D9504x-D9505y and D9506z****Clinical orthodontic practice***Professor Di Salvo and the staff.*

Supervised clinical practice in the use of removable, edgewise, extraoral, and Begg appliances. *Six three-hour sessions a week.*

D9507x**Biomechanics***Professor Blechman.**Seven two-hour lectures.***D9508y****Practice management in orthodontics***Dr. Ruderman.*

Lectures on the administration of orthodontic practice. *Five two-hour lectures in alternate years.*

D9509x-D9510y**Orthodontic diagnosis and treatment planning***Professor Di Salvo and the staff.**One one-hour seminar a week.***D9513y****Public health aspects of orthodontics***Professor Huettner.**Four two-hour lectures.***D9514y****Oral and maxillofacial surgery related to orthodontics***Professor Roser and the staff.*

Practical considerations of unerupted teeth, palatal expansion, residual alveolar clefts, and dentofacial deformities. *Four two-hour lectures.*

D9515x-D9516y, D9517x-D9518y**Orthodontic literature review***Professors Cangialosi and Nahoum.**One two-hour seminar a week.***D9519x****Dental materials***Professor Rosenblum.*

Lectures and laboratory on the physical and chemical properties of the metals and other materials used in orthodontics and pediatric dentistry, with clinical applications. *Six one-hour lectures.*

D9520y**The cleft-palate patient***Professor Isaacson and the staff.*

Lectures on the various problems in the treatment of the cleft-palate by the orthodontist. Coordination with related specialties is emphasized. *Six two-hour lectures.*

D9521x-D9522y, D9523x-D9524y

Theory and practice of orthodontics
Professor Di Salvo and the staff.

Lectures, discussions, and demonstrations in which theory is correlated with clinical observation and practice. *Three one-hour lectures a week in the first year and one lecture hour a week in the second year.*

**D9525y-D9526z, D9527x-D9528y,
D9529z****Thesis**

Professor Di Salvo and the staff.

The student conducts an investigation dealing with a subject of the student's choice and approved by the program director. The results of the investigation must be presented in the form of a written thesis that should be completed one month before the end of the final term.

**D9966x-D9967y and D9968x-D9969y
Orthognathic surgery conferences**

Professors Cangialosi and Roser.

Seminars in diagnosis and treatment planning of those cases that exhibit complex dento-facial dysplasias requiring both surgical and orthodontic treatment for their resolution. Cases are presented by students and staff of the Divisions of Oral Surgery and Orthodontics. *One one-hour seminar a month.*

Pediatric Dentistry**D9600x-D9601y**

Pediatric dental theory: technique and practice

Professors Davis and Hills.

Conferences and visual education on basic concepts of operative procedures, pulp therapy, and space maintenance.

D9602x-D9603y, D9604x-D9605y

Clinical practice in pediatric dentistry

The staff.

Supervised clinical practice in all phases of pediatric dentistry and related disciplines.

D9606x-D9607y, D9608x-D9609y

Anesthesiology and operating room protocol (rotation)

Professors Myers and Hills.

A rotation in the Anesthesiology Department of Presbyterian Hospital and didactic material on operating room techniques. Includes actual cases performed in the operating room.

D9610x-D9611y, D9612x-D9613y

Care of the neurologically handicapped child at Blythedale Children's Hospital (rotation)

Professors Davis and George.

The clinical management of the neurologically handicapped child is stressed, including special techniques for the sedative management of difficult patients.

D9620x-D9621y

Preventive and interceptive orthodontic clinic

Professor Bilik.

Theory and application of preventive interceptive orthodontic techniques for the pediatric dental and adolescent patient. Includes cephalometric and related diagnostic evaluation.

D9624x-D9625y, D9626x-D9627y

Clinic for the handicapped child

Professors Metcalf and Cohen.

Clinical experiences with the handicapped child emphasizing comprehensive treatment planning and behavior management.

D9628x-D9629y

Preventive and interceptive orthodontic clinic

A continuation of *D9620-D9621.*

D9631x-D9632y, D9633x-D9634y**Thesis**

Professor Davis.

The graduate student conducts an investigation of an approved area of interest in the field of pediatric dentistry.

D9635x

Methodology in preventive dentistry

Professor I. Mandel.

Under the direction of the Division of Preventive Dentistry, seminars and projects pertinent to the prevention of dental pathology are conducted.

D9636x-D9637y, D9638x-D9639y
Pediatric dentistry guest lecture seminar series
Professors Davis and Hills.
 Prominent individuals in the field of pediatric dentistry present two-hour seminars on various contemporary topics.

D9640x
Orthodontic technique laboratory
The staff.

A laboratory course designed to instruct the student in the principles of design and construction of various orthodontic appliances.

D9641y
Nutrition
The staff of the Institute of Human Nutrition.

Study of human nutrition with emphasis on the requirements of normal growth and development and on the prevention of oral pathology.

D9642y
Child developmental psychology
Professors Davis and Hills.

A literature review and seminar series designed to prepare the pediatric dentist to understand and implement the various techniques of behavior management.

D9643x-D9644y, D9645x-D9646y
Review of the literature in pediatric dentistry
Professors Adler and Hills.
 A seminar review of the classical and current literature in pediatric dentistry.

D9647y
Neurological conditions
Professor Davis.

An overview of the human nervous system and pathologies with references to clinical expectations and management.

D9648x-D9649y
Psychosedation and behavior management in pediatric dentistry.
Professors Hills and Jaffe.

Management approaches to the difficult patient are presented, including per oral premedication, nitrous oxide sedation, and intramuscular and intravenous sedation. The didactic component is presented in seminars and with patients.

D9650x-D9651y, D9653x-D9654y
Undergraduate pediatric dentistry instruction preceptorship (rotation)
Professor Metcalf.
 Instruction by graduate students of the undergraduate student in clinical pediatric dentistry.

D9652y
Dental materials
Professor Rosenblum.

Theoretical aspects of the selection and use of the various restorative materials in pediatric dentistry.

Anesthesiology M7201
Clinical clerkship in anesthesiology
 For description, see under Dental Science (Core Courses).

Periodontics

D9700x-D9701y, D9702x-D9703y
Clinical practice in periodontics
Professor Gottsegen and the staff.

Clinical experience in diagnosis, treatment planning, and all the phases of periodontal therapy. Exposure to a wide variety of surgical procedures, various occlusal concepts, simple orthodontic procedures, temporary stabilization methods, and grounding in patient management. Emphasis on motivating the patient to practice oral hygiene. Five clinic sessions a week in the first year and six a week in the second year.

D9720x-D9721y, D9722x-D9723y
Treatment planning in periodontics
Professors Johnson, Wasserman, and Geiger.

D9724x
Minor tooth movement in periodontics
Professor Vilardi.
 The selection of cases and technic for performing minor tooth movements. One hour of lecture a week.

D9726y
Occlusion, function of the jaws and temporomandibular joint, with special reference to periodontics
Professors Tannenbaum and Vilardi.
 One one-and-one-half hour lecture and one seminar a week for one semester.

D9727x-D9728y**Histology and histopathology of periodontal structures***Professor Moskow.*

Study of microscopic aspects of periodontium in health and disease as they relate to clinical findings. Lectures and laboratory including microprojection. *Two hours a week for one year.*

D9729x-D9730y**Restorative dentistry related to periodontics***Professors Lucca, Grayson, Goldin, Scarola, Jutkowitz, and Widrow.*

Restorative dentistry significant to periodontal problems. *One one-hour lecture a week for one year.*

D9731y**Practice management in periodontics***Professor Goodman.*

One one-hour lecture a week for eleven weeks.

PERIODONTICS SEMINARS

The following seminars provide the didactic core of periodontics and are organized as several concurrent and consecutive series devoted to different subject areas. This series is a review of the basic and significant periodontic literature having to do with the biology of the periodontal structures, periodontal disease, and periodontal treatment; it concerns itself with the role of periodontics and the surrounding world.

D9704x-D9705y**Seminars in periodontics and literature review***Professors Gottsegen, Abbatiello, Connolly, and Nisselson.*

A comprehensive and intimate familiarity with the literature is developed by the extensive seminar program. In addition the ability to read critically, to evaluate, and to present personal case material is engendered. *One two-hour seminar a week for one year.*

D9708x-D9709y, D9710x-D9711y**Seminars in periodontics: periodontal therapy***Professor Winter and the staff.*

Review of the literature in periodontal therapy. Students become familiar with the historical development of periodontal therapeutic techniques by exploring the

literature, reading the classic articles, and critically analyzing the pertinent research. *One and one-half hours a week for one year.*

D9713y, D9714x-D9715y**Periodontal surgical conference***Professors Silston and Abbatiello, and the staff.*

Seminars in periodontal surgical problems; literature review, critical analysis, and student case presentation. *One one and one-half hour seminar a week throughout the academic year.*

D9716x-D9717y**Seminars in periodontics: journal club***Professor Wasserman.*

A seminar series based on selected articles from current journals. Critical analysis of the assigned paper requires research and review of pertinent literature. The objective is to develop habits of critical reading of the scientific literature. *One and one-half hours a week for one year.*

D9718x-D9719y**Seminars in periodontics: sociocultural and economic aspects of periodontics***Professor Gottsegen and the staff.*

A series of seminars and discussions in which the historical and ethical background of medicine and dentistry becomes the framework for exploring current socioeconomic issues related to the health professions. This course is based on the belief that the increasing social responsibility demanded of leaders of the health professions requires specialists with a broad cultural understanding and strong ethical values as well as advanced technical skill and scientific knowledge. *One and one-half hours a week for one year.*

FELLOWSHIPS AND POSTDOCTORAL PROGRAMS IN BASIC SCIENCES

In recognition of the need for advanced education in the basic sciences and to qualify graduates in dentistry as teachers and investigators, fellowships are offered for study and research in anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology. Fellows are normally enrolled in the Graduate School of Arts and Sciences of the

University as prospective candidates for the degree of Doctor of Philosophy.

Appointments are made on a yearly (twelve-month) basis, with opportunity for renewal or extension at the discretion of the chairman of the department in which the student is enrolled. The specific objectives of the program are to furnish more complete preparation for careers in dental education and to offer training in investigation so that research in important unsolved problems indigenous to dental science will be extended. Students may apply also to the United States Public Health Service for financial aid.

The formal instruction is elected from courses offered in the Graduate School of Arts and Sciences, the School of Dental and Oral Surgery, the College of Physicians and Surgeons, and the School of Public Health. Each fellow must formulate and carry out, under supervision, an original investigation. During the period of appointment, fellows are expected to remain in residence and devote their entire time to study and research. In order to maintain contact with clinical dentistry, the student may attend clinics in the School of Dental and Oral Surgery and will be given an opportunity to participate in undergraduate teaching.

Fellowship Application

To apply for a fellowship in the basic sciences for dentists, the applicant should obtain, from the Postdoctoral Admissions Office, School of Dental and Oral Surgery, 630 West 168th Street, New York, N.Y. 10032, an application form which should be completed and returned to the same address. Applicants should also arrange for each college or university they have attended to send two official transcripts of their records to the Postdoctoral Admissions Office. A personal interview with the applicant is required. The applicant must be accepted not only by the School of Dental and Oral Surgery but also by the chairman of the specific basic science department within which he or she wishes to study. Applications may be submitted at any time. Appointments are made as vacancies occur.

Admission to the Graduate School of Arts and Sciences

Upon acceptance to a postdoctoral program the applicant must apply for admission as a regular graduate student in basic sciences in the Graduate School of Arts and Sciences of Columbia University. The admission procedure, and the procedure and dates for registration, including payment of fees, are given in the bulletin of the Graduate School of Arts and Sciences, a copy of which can be secured by writing to the Graduate School of Arts and Sciences Office of Student Affairs, 106 Low Memorial Library, Columbia University, New York, N.Y. 10027.

The Dental Hygiene Programs

A Career in Dental Hygiene

Admission Procedure

The Baccalaureate Program

The Graduate Program

A Career in Dental Hygiene

The dental hygienist has received national acclaim as the preventive oral health professional. As the need and demand for preventive services increases, and as the field of dental hygiene moves forward in its effort to professionalize, the dental hygienist with an advanced degree in dental hygiene will be more in demand. It is through advanced education that the dental hygienist is prepared to assume the leadership roles necessary to advance dental hygiene along the continuum of professionalism and receive more status in the professional and academic community.

Advanced education and the creation of leaders in the field of dental hygiene is where Columbia excels. The majority of Columbia baccalaureate graduates are employed in non-traditional practice settings such as hospitals, special-care institutions, community health centers, corporate clinics, HMOs, dental health school programs, dental auxiliary education programs, and dental schools. More than 60 percent of Columbia's alumni with a Bachelor of Science degree continue their studies at the graduate level. Graduates from the Master of Science program hold key positions as program administrators and educators across the nation and abroad.

Admission Procedure

Prospective applicants may obtain application materials from the Division of Dental Hygiene, Room 7-221 VC, School of Dental and Oral Surgery,

Columbia University, 630 West 168th Street, New York, N.Y. 10032, telephone (212) 305-5691. The completed form should be returned to the Division of Dental Hygiene with the application fee of \$35, made payable to Columbia University. This fee cannot be returned and is not credited toward tuition. Candidates for degrees and applicants who are not degree candidates are admitted in September, January, May, or July.

ACCEPTANCE FEE

Within two weeks after applicants have been informed of their acceptance, they must notify the Director that they intend to become degree candidates. A check or money order for \$200, payable to Columbia University, must accompany the applicant's acceptance. If the applicant registers at the next enrollment, the amount of the acceptance fee will be deducted from the tuition for that term. If the applicant does not register, the acceptance fee will not be returned.

Admission to Individual Courses

Students who do not wish to become degree candidates may be granted permission to attend a course or courses to a maximum of 12 points if they meet the standards of scholarship and attendance required of degree candidates.

The Baccalaureate Program

In 1963, Columbia initiated a post-certificate program designed to provide advanced dental hygiene and liberal arts education for transfer students from basic dental hygiene education programs. This program leads to a Bachelor of Science degree in dental hygiene and is one of only twenty-seven programs of this type. The curriculum provides the student with advanced levels of dental hygiene knowledge and skills and a broadened background in the liberal arts. The goals of the program are to prepare dental hygienists for employment in nontraditional practice settings and for graduate study in a variety of professional schools: dental hygiene, dentistry, public health, education, business administration, and social work.

Admission Requirements

Applicants must have completed two years of dental hygiene education at an accredited dental hygiene program and must be licensed to practice dental hygiene. Proof of licensure must be submitted prior to registration for classes.

Application for admission is evaluated on the basis of the following materials submitted by candidates:

1. The application form
2. An official transcript from each college attended
3. Two letters of recommendation from college faculty members
4. One personal letter of recommendation
5. A personal statement of interest and career objectives

Applicants whose credentials are acceptable for admission will receive an invitation for an interview with the Committee on Admissions for Dental

Hygiene. Those who live in areas outside commuting distance of New York City may have an interview with members of the alumni in their respective localities at the discretion of the Admissions Committee.

Applicants from foreign countries are required to take the TOEFL examination (Test of English as a Foreign Language) in order to establish language competency; applicants must also show transcript evidence of having completed a curriculum comparable to a basic two-year curriculum that meets minimal guidelines as specified by the Council on Dental Education.

Requirements for the B.S. Degree in Dental Hygiene

Students must complete 62 points at Columbia University. Sixteen of the required 62 points must be taken as required courses through the Division of Dental Hygiene, School of Dental and Oral Surgery. The remaining 46 points are taken through the School of General Studies and consist of courses that meet the University distribution requirements for the baccalaureate degree.

Courses of Instruction

In the following course listings, *Dental Hygiene* is understood to precede all course numbers unless otherwise indicated. The University reserves the right to withdraw or modify the courses of instruction or to change instructors as may be necessary.

D3234y

Critique of dental literature

2 pts. Prerequisite: D3268. Introduction to the critical examination of dental literature. Evaluation of scientific writing and research methodology as related to the needs of the dental hygienist.

D3268x**Introduction to methods of research**

2 pts. Introduction to the philosophy, principles, and methods of scientific inquiry. Topics include research planning, techniques of making observations, and analysis and presentation of findings.

D3350x**Social dental hygiene, I**

2 pts. Basic orientation to principles of public health. An ecological approach to sociocommunity health designed through seminar sessions, class discussions, and assigned reading to sensitize the student to the dental needs of the community.

D3351y**Social dental hygiene, II**

3 pts. Through field assignments in selected social settings, the students participate in community health care planning and become acquainted with patterns for the delivery of comprehensive health care services and the role of the dental team in these patterns. Students spend one full day a week in a setting where they initiate and carry out a simple research project.

D3352x**Hospital administration**

2 pts. A year course where the autumn term is designed to give the dental hygiene student exposure to the didactic aspects of hospital administration. An overview of the functions of a hospital is presented, including the history, relationship of the hospital to the community, administrative functions, and the integration of dental health services within the hospital setting.

D3353y**Hospital administration**

2 pts. Field work in hospital administration. Students spend two full days a week in a hospital setting where they participate in hospital administration and management within a dental facility.

D3544x**Dental hygiene teaching theory**

2 pts. Basic principles, philosophies, and methods of classroom teaching. Practical experience in developing skills in design, implementation, and evaluation.

D3545y**Dental hygiene teaching practice**

2 pts. Field experiences in dental hygiene teaching, including clinical and classroom instruction.

D3546y**Oral health teaching**

2 pts. Designed to increase the student's ability to create, select, and utilize appropriate methods and materials in oral health education for elementary and secondary school programs. Students provide a minimum of eight one-hour units of instruction for various grade levels in area schools.

Distribution Requirements

English Composition: All students are required to take the English Placement Test given by the School of General Studies on the Morningside campus. Students must pass the test in order to be exempt from additional composition courses. Students who are not exempt are required to register for *English F1101* and/or *English F1102*, which do not carry credit toward the 62-point requirement for the degree. All international students whose first language is not English are required to take the English Language Placement Test specifically for non-native speakers.

Literature: At least two terms of courses in literature, to be chosen from British (*F1123*), American (*F1124*), and world literature (*F1125*), or the literature of any other language, classical or modern, either in the original or in translation. Students may also offer a literature course in the original language in partial fulfillment of the foreign language requirement. International students must take British literature and American literature.

Language: At least four terms in the same language. Conversation courses do not fulfill this requirement. Students with knowledge of a foreign language should consult the appropriate department for placement.

Social Sciences and Philosophy: At least four terms, no more than two from the same department. These courses may be chosen from anthropology, economics, geography, linguistics, oriental civilizations, philosophy, political science, social psychology, religion, and sociology. Courses in the above departments offered to meet the science requirement may not be simultaneously offered to meet the social science and philosophy requirement.

Science: At least four terms from anthropology, astronomy, biochemistry, biological sciences, chemistry, computer science, economics, geogra-

phy, geology, history, mathematics, philosophy, physics, psychology, sociology, or statistics. Courses meeting the science requirement may not also be counted toward other distribution requirements.

Fine Arts: Fine Arts F1001 and Music F1001.

Some of the above requirements may be satisfied by previous courses taken at other colleges or universities. Students who are exempt from any of the above requirements may choose elective courses from any discipline to meet the 62-point degree requirement.

The Graduate Program

The Master of Science degree program was established in 1953 as the first graduate program in dental hygiene. This program is designed to prepare candidates for faculty positions in dental hygiene education and program administration, and in dental educational programs, community and public-health dental hygiene; educational, clinical, or basic research; or graduate study at the doctoral level. It is currently one of only six programs in the country that offers the terminal degree in dental hygiene.

Admission Requirements

Applicants must have completed a bachelor's degree approved by Columbia University and must be licensed to practice dental hygiene or dentistry. Proof of licensure must be submitted prior to registration for classes.

Application for admission is evaluated on the basis of the following materials submitted by the candidates:

1. The application form
2. Official transcripts from each college attended
3. Two letters of recommendation from college faculty members
4. One personal letter of recommendation
5. A personal statement of interest and career objectives

Applicants whose credentials are acceptable for admission will receive an invitation for an interview with the Committee on Admissions for Dental Hygiene. Those who live in areas outside commuting distance of New York City may have an interview with members of the alumni in their respective localities at the discretion of the Admissions Committee.

Applicants from foreign countries are required to take the TOEFL examination (Test of English as a Foreign Language) in order to establish language competency.

Degree Requirements

The Master of Science degree is granted upon the satisfactory completion of 32 points, at least 18 of which must be earned in the Division of Dental Hygiene. These are indicated by the letter ^R preceding the course number. The remaining course work may be completed as an area of elective concentration in other graduate schools of the University: Public Health, Education, Business, Social Work, and the Graduate School of Arts and Sciences.

Courses of Instruction

In the following course listings, *Dental Hygiene* is understood to precede all course numbers unless otherwise indicated.

The University reserves the right to withdraw or modify the courses of instruction or to change the instructors as may be necessary.

^RD6001

Teaching preventive oral health services: instruction and evaluation

4 or 5 pts. An experiential study of clinical dental hygiene education utilizing the concepts inherent in a basic teaching model: instructional objectives, entering behavior, learning experiences, and evaluation procedures. Emphasis on creating and evaluating learning experiences for students in dental hygiene and dental education programs.

R D6003x or y**Curriculum**

2 pts. An overview of higher education as it relates to curriculum issues, organization, and development in the field of dental hygiene at the associate degree and baccalaureate degree levels.

R D6004x**Methods of research, I**

2 pts. Introduction to the philosophy, principles, and methods of scientific inquiry; topics include research planning, techniques of making observations, and analysis and presentation of findings. Opportunity to design research projects in clinical, social, or educational settings.

R D6005**Methods of research, II**

3 pts. Prerequisite: *Dental Hygiene D6004*. Under direction of the instructor, students plan and execute a modest research project. Results of the investigation are presented in a thesis completed before the end of the term.

D6007**Scientific writing and reporting**

1 pt. Designed to acquaint the student with basic characteristics of scientific reportage. Format, organization, word selection, and documentation of research writing are examined. Practical exercises develop writing skills necessary for the production of a logical, cogent manuscript.

D6008**Scientific writing and reporting**

1 pt. Through discussions and practical experience the student refines writing skills while developing a clear, logical, scientific manuscript. The term goal is to enable students to produce publishable articles for scientific journals in their future academic careers.

D6008y**Scientific writing and reporting**

3 pts. Development of techniques for preparation of publishable articles in professional journals and health-related lay publications, emphasizing grammar and style fundamentals through critical review, editing, evaluation, and production of manuscripts.

R D6009x-D6010y**Experiences in dental hygiene teaching**

2 pts each term. Seminar on philosophical questions and practical methods of teaching. Skill development includes design and evaluation of individual presentations that maximize the role of teacher as facilitator of student growth.

R D6011x**Advanced periodontics: lecture**

2 pts. Selected readings from current periodontal journals and class periodontal textbooks provide comprehensive knowledge of periodontal histology, pathology, and disease etiology. Emphasis is on the development of communication skills needed by the dental hygiene teacher to be conversant in periodontics.

D6012x or y**Advanced periodontics: Clinic**

1 pt. Clinical experiences in scaling and root planing procedures.

D6013x-D6014y and D6013y-D6014x
Basic science foundation for dental hygiene practice

3 pts each term. Study of selected basic science topics under the supervision of the respective basic science instructors. Analysis of the topics as they relate to dental hygiene education.

D6021x and y**Independent study**

1, 2, or 3 pts. Prerequisite: the permission of the instructor under whose guidance work will be undertaken. Proposals must have prior approval of the faculty member. Students studying for 1 point must plan to spend three hours weekly on the project, 2 points require six hours per week, and 3 points require nine hours per week.

D6022x and y**Independent study**

1, 2, or 3 pts. See description under *D6021*.

D6025**Thesis advisement**

1 pt. Continuation of thesis in consultation with course instructor.

The following courses may be taken through the School of Dental and Oral Surgery.

D6372

Oral pathology

2 pts. Lectures, demonstrations, conferences, and laboratory work on diseases of the oral cavity and contiguous structures including the jaws, teeth, and soft tissues. Emphasis on clinical manifestations and histopathology of the various diseases.

D6701

Periodontics

1 pt. Clinical teaching experiences in sophomore periodontics.

Registration, Expenses, and Financial Aid

Registration

Auditing Courses

Regulations

Fees

Estimated Expenses

Financial Aid

Honors

Living Arrangements

Student Organizations

License to Practice

Registration, Expenses, and Financial Aid

REGISTRATION

Before students may attend classes they must register in person during the registration period (see *Academic Calendar*) and fill out various forms required for University records. Late registration requires the approval of the Dean of the School and payment of a late fee (see under the listing of fees, below).

All students are asked to give Social Security numbers when registering in the University. However, Social Security numbers are required of international students *only* when those students will be receiving payment from the University. International students should consult the International Student Office, 208 Lewisohn, for further information. Other students who do not have Social Security numbers should obtain them from their local Social Security offices *well in advance of registration*.

Students who are not citizens of the United States and who need authorization for special billing of tuition and/or fees to foreign institutions, agencies, or sponsors should go to the International Student Adviser with two copies of the sponsorship letter. Special billing authorization is required of students whose bills are to be sent to a third party for payment.

AUDITING COURSES

Certificate and degree candidates in good standing who are enrolled for a full-time program in the current term may audit one or two courses (except during the Summer Session) in any division of the University (excluding Barnard College and Teachers College) without charge by filing a formal application in the Office of Stu-

dent Information Services (Black Building, Room 141) during the change-of-program period. Applications require (a) the certification of the Office of Student Information Services that the student is eligible to audit and (b) the approval of the dean of the school in which the courses are offered.

For obvious reasons elementary language courses, laboratory courses, studio courses, applied music courses, and seminars are not open to auditors; other courses may be closed because of space limitations. In no case will an audited course appear on a student's record, nor is it possible to turn an audited course into a credit course by paying the fee after the fact. Courses previously taken for credit may not be audited.

REGULATIONS

According to University regulations, each person whose registration has been completed will be considered a student of the University during the term for which he or she is registered unless the student's connection with the University is officially severed by withdrawal or otherwise. No student registered in any school or college of the University shall at the same time be registered in any other school or college, either of Columbia University or of any other institution, without the specific authorization of the dean or director of the school or college of the University in which the student is first registered.

The privileges of the University are not available to any student until he or she has completed registration. A student who is not officially registered for a University course may not attend the course unless granted auditing privileges (see Auditing

Courses, above). No student may register after the stated period unless he or she obtains written consent of the appropriate dean or director.

The University reserves the right to withhold the privilege of registration or any other University privilege from any person with unpaid indebtedness to the University.

Attendance and Length of Residence

A student in good standing may, for a valid reason, be granted a leave of absence by the dean or director of the division of the University in which he or she is registered.

Students are held accountable for absences incurred owing to late registration.

No bachelor's degree in dental hygiene will be granted to a student who has not registered for and attended Columbia University courses of instruction equivalent to two academic years of full-time work.

RELIGIOUS HOLIDAYS

It is the policy of the University to respect its members' observance of their major religious holidays. Officers of administration and of instruction responsible for the scheduling of required academic activities or essential services are expected to avoid conflict with such holidays as much as possible. Such activities include examinations, registration, and various deadlines that are a part of the academic calendar. (See *Academic Calendar* for dates of religious holidays.)

Where scheduling conflicts prove unavoidable, no student will be penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and the instructor involved, they should consult the appropriate dean or director. If an additional appeal is

needed, it may be taken to the Provost.

Grading System and Requirements for Promotion and Graduation

D.D.S. PROGRAM

The following grading system is used: A, excellent; B, good; C, fair; F, failure; YC, year course; P, pass.

There are four standing faculty committees concerned with students' academic performance. These committees are the First-Year Class Committee, the Second-Year Class Committee, the Third-Year Class Committee, and the Fourth-Year Class Committee. These committees meet during each academic year to review student performance and to make decisions related to course failures and to promotions. A student may be admitted to the second, third, or fourth year of the dental curriculum only upon recommendation of the officers of instruction under whom the student has studied during the preceding year. Students are classified for promotion or readmission under the following categories: (1) recommended for advancement; (2) recommended for readmission to the same class; (3) not recommended for advancement or readmission to the same class.

Course failures in all years of the curriculum must be corrected according to the directives of the appropriate class committee. At the discretion of the class committee, in any year of the curriculum, students may be requested to repeat the year or may be dismissed for poor scholarship. Each class committee may direct a student whose performance is marginal to undertake additional work to correct deficiencies and strengthen overall performance in any discipline.

Students are informed in writing of the academic decisions of each class committee. Students have the right to appeal decisions of the com-

mittees. A student who wishes to appeal may request that the concerned committee reverse or alter its decision. If the committee reaffirms the original decision, the student may direct an appeal to the Committee on Appeals of the School.

The School of Dental and Oral Surgery reserves the right to dismiss, or to deny admission, registration, readmission, or graduation to any student who in the judgment of the School is determined to be unsuited to the study or the practice of dentistry.

The degree of Doctor of Dental Surgery (D.D.S.) is awarded upon satisfactory completion of the prescribed curriculum.

THE POSTDOCTORAL CERTIFICATE PROGRAMS

The following grading system is used: A, excellent; B, good; C, fair; F, failure; YC, year course; P, pass.

To be awarded the certificate of training, a candidate must fulfill the following requirements to the satisfaction of the Postdoctoral Committee. The candidate must: (1) complete the prescribed courses and any required thesis; students wishing to be exempted from any of the prescribed courses may request a placement examination in the discipline involved, and the time made available by such exemptions will be planned and supervised by the Program Director for productive utilization; (2) pass prescribed written, oral, or practical examinations at the end of the period of residence; (3) attend special courses, when assigned, at hospitals or institutions affiliated with Columbia University but separate from the Medical Center; and, (4) satisfy the Postdoctoral Committee that he or she has completed all the specified requirements, both clinical and academic, for the certificate of training. Any postdoctoral student receiving marginal grades in more than one subject in any one academic year may

be advanced or promoted only upon special action and recommendation of the Postgraduate Committee.

DENTAL HYGIENE PROGRAMS

A Dental Hygiene Committee is appointed on an annual basis by the Dean of the School to review student performance and make all decisions concerning promotion, leave of absence, academic probation, and dismissal. This committee consists of faculty members from the Division of Dental Hygiene, the School of Dental and Oral Surgery, and the College of Physicians and Surgeons and the Dean and the Associate Dean for Academic Affairs of the School.

Students are entitled to meet with the Dental Hygiene Committee regarding matters of serious academic problems. Students are informed in writing of the academic decisions of this committee and have the right to appeal decisions of this committee. A student who wishes to appeal may request that the committee reverse or alter a decision. If the committee reaffirms the original decision, the student may direct an appeal to the Committee on Appeals of the School. The School reserves the right to dismiss, or to deny admission, registration, readmission, or graduation to any student who, in the judgment of the School, is judged to be unsuited to the conditions of study in the Division of Dental Hygiene.

The grading system is as follows: A, excellent; B, good; C, fair; D, minimum passing grade (undergraduate only); and F, failure.

Failure to obtain a passing grade is sufficient reason for asking a student to repeat the course or to resign. Students who fail courses with the D prefix are required to repeat them.

A student who fails a course but is permitted to remain in the program is placed on academic probation for the term following the course failure.

The mark of ABS (authorized absence from an examination) is given

by the instructor with the approval of the Director. If the ABS is not removed prior to registration for the subsequent term, it will automatically be changed to F.

The mark of INC (incomplete) is given by the instructor with the approval of the Director only to a student who has satisfactorily met the requirements of the course, but who has been compelled for reasons beyond control to postpone certain assigned papers or reports. If the INC is not removed by the end of the next term, it is automatically changed to F. Students with three or more incomplete grades are not permitted to register for the next term.

The mark of P (Pass) has no numerical equivalent and is not calculated in the grade point average. All courses with the D prefix must be taken for letter grade. No more than 6 points of P credit may be credited toward the bachelor's degree. No more than 3 points of P credit may be credited toward the graduate degree.

The mark of R (registered for course, no qualitative grade assigned) is given only to students who indicate, when they register, their intention to take the course for R credit or who file notice of change of intention with the Office of Student Information Services no later than the last day for change of program. A student who registers for R credit is not required to take the final examination, but may be required to meet any requirements established by the course instructor. Students who elect R credit should understand that degree credit is not awarded and that courses taken for R credit may not be repeated later for examination credit.

The mark of F* (failure due to unofficial withdrawal) is automatically assigned to a student who discontinues attendance in a course without formally notifying the Office of Student Information Services. In case of failure due to unofficial with-

drawal, the grade will be posted on the student's transcript, but grades of F* are not computed as part of the student's grade point average.

The mark of YC (year course) is given at the end of the first term of a course in which the full year of work must be completed before a qualitative grade is assigned. The grade given at the end of the second term is the grade for the entire course.

The required work—such as examinations, papers, written and oral reports, and class participation—for each course is prescribed solely by the instructor and the division. Most courses include a midterm and a final examination. The midterm is usually scheduled during a regular class period designated by the instructor. All final examinations are held during the official university examination period (see *Academic Calendar*). Final examinations are two, three, or four consecutive hours in length, depending on the point value of the course, the nature of the material, and the requirements of the instructor. Unauthorized absence from an examination automatically results in a failing grade. All examinations are proctored.

A student who has received the mark of ABS in any course must take a special examination before registration for the next term. The ABS is then changed to a letter grade.

A student who fails to receive a passing grade in any dental hygiene course is so notified by the division and, under circumstances determined by the instructor, may be requested to take a special examination. Special examinations are scheduled at the convenience of the instructor and the division. A student may take only one special examination in a course.

In order to continue in good standing, undergraduate students must maintain a 2.00 (C) average. All

course and clinical grades in the major Preventive Oral Health Services sequences must be at the C level or above. No more than 9 points of work with the grade of D are credited toward the bachelor's degree. Credit for D work is accepted only for courses taken at Columbia University.

Graduate students must maintain a 2.7 (B-) average, but no more than 3 points of C or C- may be credited toward the graduate degree.

A student who fails to maintain these standards is placed on academic probation for one term. If grades do not improve during that term, a student may be asked to withdraw from the program.

Academic Discipline

The following statement on student discipline is in the Statutes of the University: "The continuance of each student upon the rolls of the University, the receipt of academic credits, graduation and the conferring of any degree or the granting of any certificate, shall be subject to the disciplinary powers of the University, which shall be free to cancel his registration at any time on any grounds it deems advisable."

HONOR CODE

Academic and intellectual integrity are accepted principles in the dental profession. An Honor Code, created and administered by the student body, is the formal acknowledgment of this understanding at the School of Dental and Oral Surgery. Each dental student is expected to abide by it.

CONDUCT

All members of the University community, its visitors and guests, are governed by the Rules of University Conduct which apply to all demon-

strations, including rallies and picketing, that take place on or at a University facility. It is the student's responsibility to be aware of all provisions, regulations, and procedures contained in the Rules. Copies are available in the Office of the University Senate, 406 Low Memorial Library.

Changes in Programs of Study (Dental Hygiene)

Once registered, a student may drop or add courses or change sections by filing a formal change-of-program application with the Office of Student Information Services during the change-of-program period each term (see *Academic Calendar*). All such changes must first be approved by the student's adviser before submission to the Office of Student Information Services.

Students may drop courses *after* the change-of-program period by following the same procedure; however, for individual courses dropped after the last day for change of program in each term, no adjustment of tuition is made. *Failure to attend classes or unofficial notification to the instructor does not constitute dropping a course and results in a failing grade in the course.*

FEES

The following fees are prescribed for the D.D.S. program, for each of the postdoctoral programs, and the dental hygiene programs. Fees are subject to change at any time at the discretion of the Trustees. Fees for partial programs are assessed by the Registrar as provided by the University statutes. Below are the fees for the 1985-1986 academic year. Fees for the 1986-1987 academic year are expected to increase approximately 10 percent.

University charges such as tuition and fees, and residence halls and board plans are due and payable in full by the date announced before the beginning of each term. The full amount of any charge may be paid when due without penalty or payment may be made in installments. If installment payments are made, a FINANCE CHARGE is assessed on amounts not paid by the due date on the initial bill received prior to registration and thereafter as indicated on subsequent monthly bills. In either event, however, the student is required to sign a Retail Installment Credit Agreement at the time of registration which sets forth the terms and conditions of payment. All charges must be paid by the end of the term.

It is the policy of the University to withhold diplomas, certificates, and transcripts until all financial obligations have been met. Candidates for graduation are urged to pay their bills in full at least one month prior to graduation.

In the event a diploma, certificate, or transcript is withheld because of an unpaid bill, a student will be required to use a certified check, money order, or cash to release any of the aforementioned documents.

Tuition

Full-time D.D.S. students, per academic year	\$13,286.00
Full-time certificate students, per academic year	11,108.00
Full-time dental hygiene students	7,582.00
Autumn and spring terms, per term	3,791.00
Part-time dental hygiene students, for courses, per point	253.00

Health Service and Hospital Insurance Fees

Full-time D.D.S., dental hygiene, and certificate students per year (September 1–August 31)*

Health Service Fee	\$325.00
Hospital Insurance Premium	245.00

The student health service fee contributes to the cost of operating the Student Health Service. The hospital insurance fee pays the annual premium of the Associated Hospital Service of New York. Participation in these programs is compulsory for all full-time students; students who already carry hospital insurance, however, will be charged the health service fee only. Part-time students are encouraged to participate in the combined health plan. Upon payment of additional fees, students can acquire hospital insurance for their dependents and the latter are eligible to receive the benefits of the health service program. Students should consult the Office of Student Information Services, Black Building, Room 141, for further information on dependent coverage.

The Student Health Service, which holds daily office hours, is on the street level of Bard Haven Tower 1 (60 Haven Avenue).

All entering students are required to have a physical examination by their physician before matriculation.

Application Fees and Late Fees

Application for admission	\$35.00
Late application, or late renewal of application, for a degree or certificate	50.00

*Candidates for the M.S. degree who are admitted in January pay approximately one-half the annual hospital insurance premium at their first registration.

Late Registration Fees

During late registration	\$50.00
After late registration	100.00

Fees for Repeated Courses

A student who is required to repeat the work for any one year must pay the full tuition and fees. Repeated courses are paid on a per point basis.

Withdrawal and Adjustment of Fees

Students in good academic standing who are not subject to discipline will always be given an honorable discharge if they wish to withdraw from the University. Students who decide to withdraw from the University must notify the Dean and the Office of Student Information Services at once. For dental hygiene students who are under twenty-one years of age, their parents or a guardian must first give consent in writing to the Director of the Division of Dental Hygiene.

If a student withdraws from the School, a partial return of the tuition may be authorized by the Office of Student Information Services. Any adjustment of the tuition that the student has paid is reckoned from the date on which the Office of Student Information Services receives the stu-

dent's written notification. Application fees, late fees, and special fees are not subject to rebate. Up to and including the second Saturday after the first date of classes, tuition will be retained in the following amount:

Full-time study	\$75.00
Part-time study	40.00

After the last day to change programs in each term (see *Academic Calendar*) the above amount is retained, plus an additional percentage of the remaining tuition (as indicated in the adjustment schedule), for each week, or part of a week, of the term up to the date on which the student's written notice of withdrawal is received by the Office of Student Information Services. A student's financial assistance will be adjusted to reflect reductions in the student's overall budget. Excess financial aid will be restored proportionately to the funds from which it was drawn.

Application or Renewal of Application for Degrees or Certificates

Degrees and certificates are awarded three times a year—in October, January, and May. A candidate for any Columbia degree or certificate must file an application with the Office of Student Information Services, Room

ADJUSTMENT SCHEDULE

	MINIMUM TUITION RETAINED	PERCENTAGE OF REMAINING TUITION RETAINED
Up to and including the dates specified above	\$40 or \$75	0
Following week	40 or 75	10
Second following week	40 or 75	20
Third following week	40 or 75	30
Fourth following week	40 or 75	45
Fifth following week	40 or 75	60
Sixth following week	40 or 75	75
Seventh following week	40 or 75	90
Eighth following week	40 or 75	100 (no adjustment)

141, Black Building, by the date specified in the Academic Calendar. After the dates specified in the Academic Calendar and until the expiration of the *late* filing period for each conferral date a late fee of \$50 will be charged. Applications received *after* the late filing period will automatically be applied to the next conferral date.

If the student fails to earn the degree by the conferral date for which he or she has made application, the student may renew the application. A \$50 late fee will be charged for late filing of renewals of application according to the same schedule as for original applications.

Requests for Transcripts

The Family Educational Rights and Privacy Act of 1974 as amended prohibits the release of educational records by institutions without the specific written consent of the student or alumnus. Students or alumni may request copies of their records by writing to the Office of Student Information Services, 630 West 168th Street, New York, N.Y. 10032. *Official* copies will be sent directly by the University only to an official address such as another university, a business firm, or government agency. However, students or alumni may request that unofficial copies of their transcripts (stamped "Student Copy") be sent directly to them.

There is a charge of \$5 a copy for each transcript requested or \$5 for the first copy plus \$1 for each additional copy when requested at the same time. A maximum of \$20 is charged for fifteen or more transcripts ordered at one time. There is no charge for intrauniversity copies sent between University offices. Transcript requests are processed in the order received and require five to seven working days for processing. Specific deadlines should be mentioned, and checks accompanying requests should

be made payable to Columbia University.

ESTIMATED EXPENSES

D.D.S. Program

Books. The approximate cost of books will be: in the first year, \$450; in the second year, \$500; in the third year, \$250; in the fourth year, \$100. Book lists are posted for each class during registration week. Books may be purchased from the Medical Center Bookstore on the first floor of the Black Building. The store is maintained expressly for the convenience of the students and staff of the Medical Center schools and hospitals.

Instruments and Supplies. Each student must purchase from the University a package of instruments necessary for preclinical and clinical dental instruction. The estimated cost of these instruments for students entering in September 1985 is approximately \$5,800, and arrangements have been made to spread the \$5,800 expenditure over the four-year period. In addition to the purchased instruments, students are provided with certain clinical instruments for use during the third and fourth years, at a rental fee of \$50 a year. Rental equipment assigned to students must be returned. A charge is made for loss, breakage, and abnormal wear.

Microscopes. During the first and second years microscopes are provided by the School for a rental of \$60 a year. If a student prefers to provide his or her own microscope, the student must have it approved by the Department of Anatomy. It is recommended that the microscope be of standard make equipped with: (a) quadruple nose piece; (b) Abbe or variable focus condenser; (c) 4x, 10x, 43x objectives; (d) 96x oil immersion lens; (e) 10x wide field eye piece; (f) mechanical stage; (g) attached lamp; (h) carrying case.

The cost of a new microscope ranges from \$600 to \$1,000, and of a reconditioned microscope from \$200 to \$500. Arrangements for approval and for purchase or rental should be made before registration for the opening term.

Variations in these estimated costs may be necessary because of price fluctuations or new developments. These figures are presented as a guide for student planning. Students must *not* present checks made in advance and based on these figures. Details are sent immediately prior to registration.

Lockers. Each entering student is assigned a locker; the student must use a combination lock as prescribed by the School.

Postdoctoral Certificate Programs

Since the prices of books and instruments may fluctuate and since it may be necessary for the School to make substitutions because of supply shortages, the figures given below for instruments and books are only approximate.

PROGRAM	TUITION (2 YEARS)	INSTRUMENTS SEE NOTE*	BOOKS
Endodontics	\$22,216		\$275
Orthodontics	22,216		330
Pediatric Dentistry (cerebral palsy)	22,216		220
Periodontics	22,216		275

IMPORTANT: According to Treasury decision 6291, under Section 162 of the 1954 Internal Revenue Code, income tax deductions are allowed in many instances for tuition and other educational expenses. Students are referred to the federal ruling on income tax deductions for teachers and other professional people seeking to maintain or improve skills in their employment.

*Instrument and expendable supplies purchase is required of students enrolled for graduate certificates and for dental hygiene degrees. Exception: Dental handpieces are rented by dental hygiene degree candidates. An allocation of purchase and rental responsibilities is provided to graduate certificate candidates prior to registration.

Dental Hygiene Programs

Approximate annual costs are:

Room and Board	\$4,000
Books	350
Tuition	\$7,582

FINANCIAL AID

Students may apply for financial aid through the Financial Aid Office. The Financial Aid Office assists students in the processing of state student loan applications and other external forms of student aid. Distribution of school-based aid (Columbia University administered loans and grants) is determined on the basis of need. The School utilizes the Graduate and Professional School Financial Aid Service (GAPSFAS) to determine each student's need. Each student's need is re-examined *annually* to assure continued equitable distribution of aid. Information concerning cost of education, application procedures, forms, and deadlines is sent to the newly admitted student as part of the financial aid booklet.

The heavy schedule of the School makes it difficult for D.D.S. students to undertake outside part-time work during the academic year. Summer work-study positions are available to entering and first-year students. Second- and third-year students performing clinical duties during the summer session are able to participate in the work-study program on a limited basis.

Additional questions may be directed to the Financial Aid Office, Columbia University School of Dental and Oral Surgery, 630 West 168th Street, New York, N.Y. 10032, telephone (212) 305-3478.

Financial aid is defined as those resources available that assist the student in meeting educational costs. These include parental and student resources, state or federally insured student loans, state scholarship or in-

centive awards, university loans and school grants. The following is a list of the programs in which dental students participate. It is recommended that students consult the financial aid booklet for current updates on these programs.

Guaranteed Student Loans (GSL)

Each state participates in a federal guaranteed student loan program. Students are eligible to apply either directly to their home state or through a state guarantee agency. Applications and program information may be obtained through lenders (banks, credit unions, or pension or welfare funds). Consult the financial aid booklet for updated information.

Columbia University Loans

Student loans are available to Columbia University degree candidates on the basis of financial need. These funds may be used for tuition, fees, books and supplies, and subsistence. Unusual or excessive personal expenses that fall outside the normal student budget may not be included. Student loans are not intended to cover the entire cost of attending the University but are meant, rather, to supplement a student's own resources. Repayment of a Columbia University loan must begin when a student ceases to be registered as a full-time degree candidate at the University and may be extended over a period of ten years, as long as the minimum monthly payment does not fall below \$30.

National Direct Student Loans—Health Professions Loans

These funds are provided through federal legislation. National Direct Student Loans are provided for degree candidates in the Division of Dental Hygiene and the D.D.S. pro-

gram; Health Professions Loans are for D.D.S. candidates. The assignment of these funds is at the discretion of the School as part of financial aid distribution. Consult the financial aid booklet for details on terms, interest rates, and repayment terms.

New York State Tuition Assistance Plan (T.A.P.)

Any student in the D.D.S. program or in the Division of Dental Hygiene who has been a legal resident of New York State for the year preceding enrollment is eligible for a New York State Tuition Assistance Plan (T.A.P.) award for each term in which he or she is registered as a full-time degree candidate. The amount of this award is based upon the net taxable balance of the student's income and the income of those responsible for his or her support, as reported on the New York State income tax return for the previous calendar year. Further information and application forms can be obtained from the New York State Higher Education Services Corporation, 99 Washington Avenue, Albany, N.Y. 12255.

Pell Grants

Undergraduate students enrolled for at least a half-time course of study who have not completed a bachelor's degree are eligible to apply for a grant based on financial need. Applications are available from Basic Grants, Box 84, Washington, D.C. 20044.

Postgraduate Periodontics Student Loan Fund

The David Monahan Postgraduate Periodontics Student Loan Fund is used to help periodontic postgraduate students who are in financial need. No interest will be charged while the student is in the program, but will be applied upon graduation

at a low rate. Loans are to be repaid within five years of leaving the program. For further information contact the director of the periodontics program.

The Clark Foundation Scholarships

Several partial scholarship grants are available for applicants to the D.D.S. program and students already in the D.D.S. program. Grants are made on a yearly basis to those student applicants who show evidence of high academic standing, outstanding recommendations, and financial need. Consult the financial aid booklet for instructions on application.

Northeastern Society of Orthodontists Student Loan Fund

The Northeastern Society of Orthodontists provides limited loans to second-year postdoctoral students in orthodontics who fulfill certain requirements, including financial need. The loans are interest-free while the recipient is enrolled in the program and may be repaid in installments at low interest after graduation. Further information may be obtained from the Secretary of the Society or the Program Director.

American Dental Hygienists' Association Scholarships

The ADHA Foundation offers a scholarship program for full-time students who have a minimum grade-point average of 2.50 (on a 4.0 scale) for the following groups:

Certificate Scholarship Program. For students enrolled in a certificate/associate degree program or a bachelor's degree program and entering the second year of the dental hygiene curriculum.

Post-Certificate/Baccalaureate Scholarship Program. For students who are graduates of a certificate/associate degree program and can provide evidence of acceptance as a full-time bachelor's degree candidate in an accredited four-year college or university.

Post-Certificate/Master's Fellowship Program. For students who are licensed dental hygienists and hold a bachelor's degree or will receive a bachelor's degree at the end of the current academic year and can provide evidence of acceptance as a full-time master's degree candidate in a university graduate program.

Information about the ADHA Scholarship Program can be obtained from the American Dental Hygienists' Association Foundation, 444 N. Michigan Avenue, Suite 3400, Chicago, Ill. 60611.

The National Dental Hygienists' Association Scholarship Program

An eligible student must be a member of a minority race (Black, Hispanic, American Indian, Mexican American, or Oriental), must have completed at least the first term of a dental hygiene program with a scholastic average of 2.5 or better, and must show financial need.

Information about the National Dental Hygienists' Association Scholarship Program can be obtained from Scholarship Chairperson, NDHA, Lincoln Land Community College, Shepherd Road, Springfield, Ill. 62708.

School of Dental and Oral Surgery: Teaching Assistant Program

A limited number of teaching assistantships are available to master's degree candidates on a competitive basis. Under this arrangement, a student is assigned to a division of the School of Dental and Oral Surgery

for two days a week and carries out functions assigned by that division. In return, the student receives tuition exemption at the rate of 15 points a term and a monthly living stipend. The 32-point master's degree program is completed in ten months under this arrangement. Eligibility is based on being an accepted degree candidate. Additional information can be obtained from the Director of the Division of Dental Hygiene.

HONORS

D.D.S. Program

Alpha Omega Scholarship Award. A plaque presented to the graduating student (not necessarily an Alpha Omegan) with the highest scholastic average for the four years of dental studies. First awarded in 1949.

American Academy of Oral Medicine. A certificate and a subscription to the *Journal of Oral Medicine*, awarded to a fourth-year student for excellence in this field.

American Academy of Gold Foil Operators. Certificate awarded to a fourth-year student for excellence in gold foil technique.

American Academy of Dental Radiology. A certificate awarded to a fourth-year student for excellence in this field.

American Academy of Periodontology. A student award certificate and a one-year subscription to the journals published by the American Academy of Periodontology, awarded to an outstanding student in periodontics.

American Association of Oral Pathology. A certificate to the graduating student who has shown the most interest, accomplishment, and promise in the field of oral pathology.

American Association of Orthodontists. A certificate awarded to a student showing exceptional interest and special aptitude in orthodontics.

American College of Dentists, New York Section. An award of \$100 and a plaque or scroll. Presented to a third-year student who is a good all-around student, a member of the student section of the American Dental Association, and who exhibits leadership.

American Dental Society of Anesthesiology, Inc. An award certificate and a one-year subscription to *Anesthesia Progress*, awarded to a fourth-year student who has shown outstanding ability or interest in the field of pain control.

American Society of Dentistry for Children. A certificate, one year of membership in the Society, and a one-year subscription to *The Journal of Dentistry for Children*, awarded to a fourth-year student.

Herbert J. Bartelstone Award in Pharmacology. An award given annually to a member of the graduating class of the College of Physicians and Surgeons and a member of the graduating class of the School of Dental and Oral Surgery who have demonstrated exceptional accomplishments in pharmacology.

William Bailey Dunning Award for Excellence in Periodontology. A medal awarded to the graduating student who is the most proficient in periodontology. First awarded in 1957.

Ella Marie Ewell. A medal awarded to the graduating student who, in the best judgment of the Faculty, has exhibited meritorious service to students, faculty members, and the University.

Long Island Academy of Odontology. A certificate awarded to a student showing exceptional proficiency in preventive dentistry.

Arthur Merritt Award. A certificate and award of \$50 to the outstanding fourth-year student in periodontics.

Prize for Excellence in Operative Dentistry. A certificate awarded by the staff of the Division of Operative Dentistry to the graduating student who has shown the greatest proficiency in operative dentistry.

Certificate for Excellence in Pedodontics. A plaque awarded to a graduating student for excellence in pedodontics. Established by the Class of 1929.

Psi Omega Fraternity Award. A plaque presented by the Gamma Lambda Chapter to the graduating student who has displayed exemplary professional conduct.

Rowe-Wiberg Medal. An award made by the Association of Dental Alumni to the graduating student who has shown the greatest proficiency in prosthetic dentistry.

Van Woert Award. A scholarship given to the senior dental student, at the beginning of the year, who has high scholastic attainment and personal character as well as need for financial assistance.

Dental Hygiene Program

Blackerby Award. Awarded by the Dental Hygiene Faculty to the graduate of the Baccalaureate Program who demonstrates scholastic honors and leadership potential.

Clinical Proficiency Award. Awarded by the Dental Hygienists' Association of the City of New York to honor the student who demonstrates the greatest proficiency in the clinical practice of dental hygiene. A certificate and payment of dues to

cover one year's membership in the American Dental Hygienists' Association and its component and constituent associations is provided annually.

John Opie McCall Award. Awarded to the dental hygiene student who demonstrates proficiency in the area of periodontics.

Patricia McLean Award. Awarded by the Dental Hygiene Alumni Association of Columbia University to the graduate of the Master of Science degree program who demonstrates scholarship and leadership potential.

Sigma Phi Alpha, Lambda Chapter. Sigma Phi Alpha is a National Honor Society established in schools of dental hygiene to recognize scholarship, service, and character among students. Membership is awarded to the top 10 percent of the graduating class, based on scholastic standing and leadership potential.

The Albert H. Stevenson Medal. Awarded by the Dental Society of the State of New York to an honor student from each of the dental hygiene schools in the State. It commemorates the interest and work of Dr. Stevenson in the field of dental hygiene.

The F. J. Swanson Medal. Awarded since 1920 by Dr. F. J. Swanson to the student who demonstrates excellence in theory and practice.

LIVING ARRANGEMENTS

Health Sciences Campus

The University seeks to provide housing for all students who are regularly registered for an approved program of full-time study. In recent years, however, a housing shortage has developed in New York, and on occasion the demand has exceeded the number of spaces available. The School of Dental and Oral Surgery,

in cooperation with the other divisions of the Health Sciences campus, shares in the available dormitory space. The Central Housing Office of the Health Sciences campus in Bard Hall (50 Haven Avenue) acts as a clearing house for students who are seeking housing on or near the campus. Each year in May this office automatically mails information and an application for housing to each newly enrolled student. Completed applications are forwarded to the chairman of the School Housing Committee for ranking. Priority for placement is given to entering students, with out-of-state students receiving priority over in-state students. In addition to assisting students in securing dormitory space or University-owned apartment housing, the Central Housing Office maintains a current list of private apartments available in the surrounding neighborhood. Applications and information concerning room availability will be furnished upon request by the Director of the Central Housing Office, Bard Hall, 50 Haven Avenue, New York, N.Y. 10032, telephone (212) 305-6853.

STUDENT ORGANIZATIONS AND ACTIVITIES

Student Council

In accordance with the plan for all schools in the University, the students are organized under a Student Government Association. Through this organization the students have representation on the Columbia University Student Council, and are eligible for participation in the many activities at the Medical Center and on the Morningside campus.

Omicron Kappa Upsilon

Epsilon Epsilon chapter of Omicron Kappa Upsilon, national honorary fraternity, was chartered in the School of Dental and Oral Surgery in 1934.

The purpose of the fraternity is to recognize and honor a maximum of 12 percent of the members of the graduating D.D.S. class on the basis of scholarship, character, and potential for further professional growth and attainments.

The William Jarvie Society

The William Jarvie Society for Dental Research is a dental honor society, membership in which is based on scholarship and interest in dental research, and for which second-, third-, and fourth-year D.D.S. students are eligible. The society was organized in the School of Dental and Oral Surgery in 1920 and named after Dr. William Jarvie because of his wide interest in the promotion of dental research. The society aims to promote the spirit of research among the students.

The Student Dental Association

The Student Dental Association of Columbia University was established in 1960 to provide a professional and social forum in which D.D.S. candidates would participate. The general program of this organization is patterned after the program of local dental societies, in which the graduate dentist contributes to the organized dental profession. Undergraduate dental students are exposed to the democratic process of organization function, policy development, and programming as they meet their responsibilities for supporting the program of their association.

Student American Dental Hygienists' Association

All students in the Division of Dental Hygiene belong to this association, which meets monthly. The purpose is to foster an interest in the work of the American Dental Hygienists' Association and to prepare students for ad-

mission after graduation to full and active membership in the professional organizations.

International Students

The staff of the Office of the International Student Adviser on the Morningside campus provides advice and counseling to international students on such matters as housing, personal and financial problems, and regulations of the United States Immigration and Naturalization Service (visas, extensions to stay, work permission, temporary departure from the United States, transfer from Columbia to another school, termination of study). Information about the various international clubs at Columbia and about opportunities to attend conferences, travel in the United States, and participate in community and cultural activities can be obtained from this office. Maps of New York City and discount tickets to concerts and plays are available.

The staff of the Office of International Student Admissions provides information and counseling on University admission, advanced standing, English proficiency examinations, and academic placement.

Postdoctoral Programs

Student organizations in the postdoctoral disciplines are open to membership. The Program Director should be contacted for additional information.

LICENSE TO PRACTICE

Dentistry

Successful performances in Parts I and II of the examinations given by the Council of the National Board of Dental Examiners are preliminary requirements for licensure in most states of the United States, including New York.

Those seeking licensure solely in New York State may take the final or clinical examinations offered by the Board of Dental Examiners of the State of New York. Successful completion of these examinations entitles the applicant to licensure, assuming the prerequisites of good moral character, citizenship, or declaration of intention of becoming a citizen are fulfilled. For additional information, request a copy of Handbook 10, *Professional Education*, from the Division of Professional Licensing Services, New York State Department of Education, Albany, N.Y. 12201.

It is advisable, however, that candidates for licensure take the clinical examinations offered by the North East Regional Board of Dental Examiners, the content and format of which are similar to those of New York State. Successful completion of these examinations, together with fulfillment of such minor prerequisites as may be required by individual states, permits licensure in the states of Connecticut, Illinois, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia, and the District of Columbia, as well as New York State.

Additional information, including applications, format of examinations, and examination schedules are avail-

able from the North East Regional Board of Dental Examiners, 4645 Deane Avenue N.E., Washington, D.C. 20019.

Dental Hygiene

Candidates for licensure by examination in all states are required to achieve passing scores on the National Board Dental Hygiene Examination as a preliminary requirement.

In addition, candidates must take a clinical examination offered by individual states or regional testing agencies, such as the North East Regional Board. Successful completion of this examination, together with fulfillment of minor prerequisites as may be required by individual states, permits licensure in the states listed above under License to Practice Dentistry.

Additional information, including applications, format of examinations, and examination schedules are available from the Council on National Board Examinations, ADA, 211 East Chicago Avenue, Chicago, Ill. 60611; North East Regional Board of Dental Examiners, 2504 Virginia Avenue, N.W., Washington, D.C. 20037; and the State Education Department, Division of Professional Licensing Services, Empire State Plaza, Albany, N.Y. 12230.

Officers of Instruction

ANATOMY AND CELL BIOLOGY

Chairman

Professor Michael D. Gershon

Richard T. Ambron

Assistant Professor of Anatomy and Cell Biology
B.S., Villanova, 1964; Ph.D., Temple, 1971

Ernest W. April

Associate Professor of Anatomy and Cell Biology
B.S., Tufts, 1961; Ph.D., Columbia, 1969

Craig H. Bailey

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John E. Bergmann

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Christopher A. Gabel

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B.A., Tokyo, 1966; Ph.D., Princeton, 1971

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B.A., Yale, 1966; Ph.D., Brandeis, 1971

Marie-France

Maylie-Pfenninger

Assistant Professor of Anatomy and Cell Biology
Lic.Sci., Marseilles, 1963; Dr. Spécialité (Biochemistry), 1967; Ph.D., 1972

Melvin L. Moss

Professor of Anatomy and Cell Biology and Professor of Dentistry
B.A., New York University, 1942; D.D.S., Columbia, 1946; Ph.D., 1954

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Karl H. Pfenninger

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M.D., Zurich, 1971

Tuan Duc Pham

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ANESTHESIOLOGY

Chairman
 Professor Henrik H. Bendixen

Henrik H. Bendixen
Professor of Anesthesiology
 M.D., Copenhagen, 1951

Lester C. Mark
Professor of Anesthesiology
 M.D., Toronto, 1941

S. H. Ngai
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 M.B., National Central (China), 1944

BIOCHEMISTRY AND MOLECULAR BIOPHYSICS

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Barry Honig
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Arthur Karlin <i>Professor of Biochemistry and Neurology</i> B.A., Swarthmore, 1957; Ph.D., Rockefeller, 1962	Bonnie A. Wallace <i>Assistant Professor of Biochemistry</i> B.S., Rensselaer Polytechnic Institute, 1973; M.Phil., Yale, 1975; Ph.D., 1977	Spyros M. Vratsanos <i>Senior Research Scientist in Dentistry</i> B.S., Athens (Greece), 1950; M.S., Adelphia, 1956; Ph.D., Fordham, 1961
Alvin I. Krasna <i>Professor of Biochemistry</i> B.A., Yeshiva, 1950; Ph.D., Columbia, 1955		
Seymour Lieberman <i>Professor of Biochemistry (assigned to Obstetrics and Gynecology)</i> B.S., Brooklyn, 1936; M.S., Illinois, 1937; Ph.D., Stanford, 1941	DENTAL AND ORAL SURGERY	COMPREHENSIVE CARE SECTION
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Lee Makowski <i>Assistant Professor of Biochemistry</i> B.S., Brown, 1971; M.S., Massachusetts Institute of Technology, 1973; Ph.D., 1976	<i>Director</i> Professor Irwin D. Mandel	Jay K. Weiss <i>Associate Clinical Professor of Dentistry</i> B.A., Harvard, 1948; D.M.D., Tufts, 1952
Dinshaw J. Patel <i>Professor of Biochemistry</i> B.S., Bombay, 1961; M.S., California Institute of Technology, 1963; Ph.D., New York University, 1966	<i>Associate Director</i> Professor Solon A. Ellison	Stephen Wotman <i>Associate Professor of Dentistry (in Public Health and Health Administration)</i> D.D.S., Pennsylvania, 1956
Maurice Rapport <i>Professor of Biochemistry (assigned to Psychiatry)</i> B.S., College of the City of New York, 1940; Ph.D., California Institute of Technology, 1946	Irwin D. Mandel <i>Professor of Dentistry</i> B.S., College of the City of New York, 1942; D.D.S., Columbia, 1946; Ph.D., 1958	Community Health
James Lewis Roberts <i>Assistant Professor of Biochemistry (Center for Reproductive Sciences)</i> B.S., Colorado State, 1973; Ph.D., Oregon, 1977	Herbert I. Oshrain <i>Clinical Professor of Dentistry</i> B.S., College of the City of New York, 1938; D.D.S., New York University, 1942	Julius R. Berger <i>Adjunct Associate Professor of Dentistry</i> B.S., City College (New York), 1961; D.D.S., State University of New York (Buffalo), 1965
Parithychery R. Srinivasan <i>Professor of Biochemistry</i> B.Sc., Madras, 1946; Ph.D., 1953	Bernard Telsey <i>Research Scientist in Dentistry</i> B.A., New York University, 1952; D.D.S., Pennsylvania, 1956	Ronald P. Burakoff <i>Adjunct Assistant Professor of Dentistry</i> B.Sc., McGill, 1969; D.M.D., Tufts, 1973; M.P.H., North Carolina (Chapel Hill), 1974
		Neal A. Demby <i>Adjunct Associate Professor of Dentistry</i> B.A., Rutgers, 1964; D.M.D., Pennsylvania, 1968
		Arthur D. Goldman <i>Adjunct Assistant Professor of Dentistry</i> D.M.D., Tufts, 1957

Alex M. Grant <i>Assistant Clinical Professor of Dentistry</i> D.D.S., Columbia, 1977; M.P.H., 1984	Bernard B. Tolpin <i>Assistant Clinical Professor of Dentistry</i> B.A., Michigan, 1956; D.D.S., Columbia, 1960	Jed Marshall Best <i>Assistant Clinical Professor of Dentistry</i> B.A., Case Western Reserve, 1972; D.D.S., 1979; M.S., Minnesota, 1981
Arnold V. Homer <i>Adjunct Assistant Professor of Dentistry</i> B.A., Brooklyn, 1960; D.D.S., Howard, 1968	Burton S. Wasserman <i>Clinical Professor of Dentistry</i> B.A., New York University, 1953; D.D.S., 1957	Elena Bilik <i>Assistant Clinical Professor of Dentistry</i> D.D.S., Buenos Aires, 1965
Hilton O. Hosannah <i>Assistant Clinical Professor of Dentistry</i> B.S., Howard, 1952; D.D.S., 1958; M.P.H., Columbia, 1970	Louis F. Weiskopf <i>Assistant Clinical Professor of Dentistry</i> B.S., City College (New York), 1968; D.D.S., Columbia, 1972	Donald F. Cohen <i>Assistant Clinical Professor of Dentistry</i> B.A., Hunter, 1966; D.M.D., Pennsylvania, 1970
Leon E. Josey <i>Adjunct Assistant Professor of Dentistry</i> B.S., Howard, 1954; D.D.S., 1960	Ardell A. Wilson <i>Assistant Professor of Dentistry</i> B.S., City College (New York), 1976; D.D.S., Columbia, 1980	Mark S. Cohen <i>Associate Clinical Professor of Dentistry</i> B.S., City College (New York), 1971; D.D.S., Columbia, 1975
James E. McIntosh <i>Adjunct Assistant Professor of Dentistry</i> B.A., Missouri, 1965; D.D.S., Meharry, 1969; M.P.H., Columbia, 1975	Dental Auxiliary Utilization	Martin J. Davis <i>Associate Professor of Clinical Dentistry</i> B.A., Yale, 1970; D.D.S., Columbia, 1974
Melvin N. Raskin <i>Adjunct Assistant Professor of Dentistry</i> B.S., New Hampshire, 1938; D.M.D., Tufts, 1943	David Marc Blass <i>Assistant Clinical Professor of Dentistry</i> B.A., Yeshiva, 1975; D.M.D., Fairleigh Dickinson, 1979	Mary L. George <i>Assistant Clinical Professor of Dentistry</i> B.A., Manhattanville, 1970; M.A., Vanderbilt, 1971; D.M.D., Boston, 1977
William R. Smith <i>Adjunct Associate Professor of Dentistry</i> D.D.S., Howard, 1959	Abraham J. Kadish <i>Assistant Clinical Professor of Dentistry</i> B.S., Rutgers, 1960; D.M.D., Pennsylvania, 1965	Neal Hammer <i>Assistant Clinical Professor of Dentistry</i> D.D.S., Columbia, 1976
Bernard A. Sutherland <i>Adjunct Assistant Professor of Dentistry</i> B.A., B.Sc., Atlantic Union, 1958; D.D.S., Howard, 1963; M.P.H., Michigan, 1974	David Kaplan <i>Associate Professor of Dentistry</i> B.S., College of the City of New York, 1958; D.D.S., New York University, 1960	Heidi L. Hills <i>Assistant Professor of Dentistry</i> B.A., Rutgers, 1975; D.M.D., Tufts, 1978
Albert J. Thompson <i>Assistant Clinical Professor of Dentistry</i> B.A., Columbia, 1954; D.D.S., 1960	Pediatric Dentistry	Lois A. Jackson <i>Assistant Clinical Professor of Dentistry</i> B.A., Columbia, 1973; D.D.S., 1977
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Margot H. Jaffe <i>Assistant Clinical Professor of Dentistry</i> B.S., Trinity (Connecticut), 1975; D.D.S., Columbia, 1980	Preventive Dentistry Lucille Katz Adlerstein <i>Assistant Clinical Professor of Dentistry</i> B.S., Columbia, 1961; M.S., 1979	Melinda C. Sadles <i>Assistant Clinical Professor of Dentistry</i> B.S., Old Dominion, 1978; M.S., Columbia, 1981
George C. Kiriakopoulos <i>Clinical Professor of Dentistry</i> B.A., Brooklyn, 1950; D.D.S., Columbia, 1954	Camille P. DiPaola <i>Assistant Clinical Professor of Dentistry</i> B.A., Lehman, 1971; D.D.S., Columbia, 1977	Irving R. Spector <i>Assistant Clinical Professor of Dentistry</i> B.S., Brooklyn, 1952; D.D.S., Pennsylvania, 1956
Mannie Levi <i>Assistant Clinical Professor of Dentistry</i> B.A., Queens (New York), 1975; D.D.S., Columbia, 1980	Robert S. Goldman <i>Assistant Clinical Professor of Dentistry</i> B.A., Temple, 1963; D.M.D., Pittsburgh, 1968	DENTAL HYGIENE
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Guy D. Metcalf <i>Associate Clinical Professor of Dentistry</i> B.A., Clark, 1970; D.D.S., Columbia, 1975	D. Harold Linn <i>Assistant Clinical Professor of Dentistry</i> B.A., New York University, 1942; D.D.S., 1945	Joan E. Barton <i>Assistant Professor of Dentistry</i> R.D.H., Eastman Dental Center, 1964; B.S., New York University, 1978; M.S., Columbia, 1979
Alfred J. Mezza <i>Assistant Clinical Professor of Dentistry</i> B.A., New York University, 1959; D.D.S., Fairleigh Dickinson, 1963	Brian L. G. Morgan <i>Assistant Professor of Dentistry (in the Institute of Human Nutrition)</i> B.Sc., London, 1971; M.Sc., 1972; Ph.D., 1975	Judith L. Goodrich <i>Adjunct Associate Professor of Dentistry</i> B.S., Loma Linda, 1967; M.A., Columbia, 1977
Deborah S. Pilla <i>Assistant Clinical Professor of Dentistry</i> B.S., William Smith, 1976; D.D.S., State University of New York (Buffalo), 1981	David S. Ostreicher <i>Assistant Clinical Professor of Dentistry</i> B.A., Clark, 1973; D.D.S., Columbia, 1977	Olga A. Ibsen <i>Associate Clinical Professor of Dentistry</i> A.A.S., State University of New York (Farmingdale), 1970; B.S., Columbia, 1972; M.S., 1975
Bernard M. Riklin <i>Associate Clinical Professor of Dentistry</i> B.A., Illinois, 1943; D.D.S., 1944	Jay Rothschild <i>Assistant Clinical Professor of Dentistry</i> B.A., Yeshiva, 1957; D.D.S., New York University, 1961	Marlene Klyvert <i>Associate Professor of Clinical Dentistry</i> A.A.S., New York Community College, 1952; B.S., Columbia, 1971; M.S., 1972; M.Ed., 1977; Ed.D., 1980
Barbara B. Rocco <i>Assistant Clinical Professor of Dentistry</i> B.A., Syracuse, 1956; D.D.S., Maryland, 1959	Iona I. Sabev-Nikow <i>Assistant Clinical Professor of Dentistry</i> D.D.S., Howard, 1968; M.P.H., Columbia, 1971	Nancy J. McVay <i>Adjunct Assistant Professor of Dentistry</i> B.S., Loma Linda, 1973; M.S., Columbia, 1977

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 M.S., 1975; M.P.H., 1980

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 B.S., Queens (New York), 1958; D.D.S., Columbia, 1959

Dona E. Wayman
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 R.D.H., West Liberty State, 1951; B.S., Columbia, 1971; M.S., 1972; M.A., 1976; Ed.D., 1978

ENDODONTICS

Acting Director
 Professor Syngcuk Kim

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Gerardo Bilotto
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 M.S., Columbia (Engineering), 1971; Ph.D., 1978

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 B.A., Hofstra, 1949;
 D.D.S., Columbia, 1953

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 B.A., Pennsylvania, 1944;
 D.D.S., Michigan, 1948

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 M.A., 1953; D.D.S., New York University, 1957

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 D.D.S., Temple, 1962

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 D.M.D., Tufts, 1982

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 D.D.S., 1978

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 D.D.S., Minnesota, 1969;
 M.S.D., University of Washington, 1975

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 B.A., Pennsylvania, 1974;
 D.M.D., 1978

Joshua M. Most
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 B.S., Colgate, 1974; M.S., C.W. Post, 1976; D.D.S., Columbia, 1980

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 D.D.S., Pennsylvania, 1960; M.S., Boston University, 1963

Samuel Seltzer
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 D.D.S., Pennsylvania, 1937

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 B.A., Hunter, 1964; M.A., Brooklyn, 1967; D.D.S., Columbia, 1973

Charles S. Solomon
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 B.A., Columbia, 1955;
 D.D.S., 1958

Lawrence S. Ullman
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 B.A., Rutgers, 1970;
 D.M.D., Pennsylvania, 1978

OPERATIVE DENTISTRY

Director

Professor Edward A. Cain, Jr.

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 D.D.S., Columbia, 1945

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Kenneth C. Deesen
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 B.A., Vermont, 1963;
 D.D.S., Columbia, 1968

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Richard M. Lichtenthal
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 D.D.S., Columbia, 1962

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 D.D.S., Columbia, 1962

Frank W. Pandolfo
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 D.D.S., Maryland, 1974

Joseph A. Pianpiano
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 B.S., Fordham, 1958;
 D.D.S., Columbia, 1962

George Rudensky
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Stanley R. Sadles
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 B.S., Columbia, 1949;
 D.D.S., 1953

Roger P. Santise
Assistant Clinical Professor of Dentistry
 B.S., Manhattan, 1966;
 D.D.S., Columbia, 1970

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Professor of Clinical Dentistry
 D.D.S., Columbia, 1948

ORAL AND MAXILLOFACIAL SURGERY

Director

Professor Steven M. Roser

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 D.D.S., New York University, 1954

Harold D. Baumash
Clinical Professor of Dentistry
 D.D.S., Columbia, 1948

Andrew Blitzer
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 D.D.S., Columbia, 1970;
 M.D., Mt. Sinai (New York), 1973

Kourken A. Daglian
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 B.S., College of the City of New York, 1941; D.D.S., Columbia, 1943

Anthony L. DiMango
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Michael Jay Goldberg
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Steven J. Goldberg
Assistant Clinical Professor of Dentistry
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Meeta J. Goswami
Assistant Clinical Professor of Dentistry
 D.D.S., Bombay, 1959;
 M.P.H., Columbia, 1966;
 M.Phil., Ph.D., 1978

Ian Y. Hu
Assistant Clinical Professor of Dentistry
 D.D.S., Columbia, 1954

Howard A. Israel <i>Assistant Professor of Clinical Dentistry</i> B.S., State University of New York (Albany), 1973; D.D.S., Columbia, 1977	Steven M. Roser <i>Associate Professor of Clinical Dentistry in Surgery and Otolaryngology</i> B.A., Middlebury, 1964; D.M.D., Harvard, 1968; M.D., 1972	Martin H. Blitzer <i>Assistant Clinical Professor of Dentistry</i> B.S., New York University, 1939; D.D.S., Pittsburgh, 1944
Mark H. Jaffe <i>Assistant Clinical Professor of Dentistry</i> B.S., College of the City of New York, 1969; D.D.S., Columbia, 1973	Daniel D. Schube <i>Associate Clinical Professor of Dentistry</i> B.A., Brooklyn, 1945; D.D.S., New York University, 1949	Daniel J. Cherico <i>Assistant Clinical Professor of Dentistry</i> B.A., St. Joseph's Seminary (New York), 1968; Ph.D., Indiana, 1973
Louis J. Loscalzo <i>Clinical Professor of Dentistry</i> B.A., Fordham, 1942; D.D.S., Temple, 1946	Boaz M. Shattan <i>Associate Clinical Professor of Dentistry</i> B.A., Columbia, 1949; D.D.S., 1943	Stephen Viton Gullo <i>Assistant Clinical Professor of Dentistry</i> Ph.D., Columbia, 1974
Louis Mandel <i>Clinical Professor of Dentistry</i> B.A., New York University, 1943; D.D.S., Columbia, 1946	Alvin L. Solomon <i>Assistant Clinical Professor of Dentistry</i> D.D.S., Georgetown, 1948	Austin H. Kutscher <i>Professor of Dentistry (in Psychiatry)</i> B.S., New York University, 1945; D.D.S., Columbia, 1946
Robert G. Marcotullio <i>Assistant Clinical Professor of Dentistry</i> B.S., Boston College, 1960; D.D.S., Columbia, 1964	Morton Jay Stern <i>Associate Clinical Professor of Dentistry</i> B.A., Upsala, 1949; D.D.S., Temple, 1953	Brian P. O'Connor <i>Adjunct Assistant Professor of Dentistry</i> B.A., St. Joseph's, 1967; M.Div., 1971; M.P.H., Columbia, 1976
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Ronald Monteferrante <i>Assistant Clinical Professor of Dentistry</i> D.D.S., State University of New York (Buffalo), 1974	PSYCHIATRIC DENTAL SERVICE <i>Director</i> Professor Austin H. Kutscher	James A. Washington, Jr. <i>Assistant Professor of Clinical Dentistry</i> B.A., Lincoln, 1953; D.D.S., Howard, 1957
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OROFACIAL GROWTH AND DEVELOPMENT

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Harvey S. Nisselson <i>Assistant Clinical Professor of Dentistry</i> B.S., Brooklyn, 1968; D.D.S., Columbia, 1972	Mario A. Vilardi <i>Assistant Clinical Professor of Dentistry</i> D.M.D., Pennsylvania, 1974	Daniel Silvio Budasoff <i>Assistant Clinical Professor of Dentistry</i> B.S., Florida, 1973; D.D.S., Columbia, 1978
Alon M. Prywes <i>Assistant Clinical Professor of Dentistry</i> D.M.D., Hebrew University Hadassah, 1979	Bernard H. Wasserman <i>Clinical Professor of Dentistry</i> B.A., Brooklyn, 1941; D.D.S., Columbia, 1944	Thomas J. Cleary <i>Assistant Clinical Professor of Dentistry</i> B.S., Georgetown, 1965; D.D.S., Columbia, 1970
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Alvin J. Grayson <i>Clinical Professor of Dentistry</i> D.D.S., Indiana, 1952	Eugene P. La Sota <i>Associate Clinical Professor of Dentistry</i> B.A., Hofstra, 1957; D.D.S., Columbia, 1961	Michael Roberts <i>Assistant Clinical Professor of Dentistry</i> B.S.Chem., Lehman, 1972; D.D.S., Temple, 1976
Karen S. Hammer <i>Assistant Clinical Professor of Dentistry</i> B.S., Barnard, 1973; D.D.S., Columbia, 1977	Joel M. Leon <i>Assistant Clinical Professor of Dentistry</i> B.A., Syracuse, 1965; D.D.S., New York University, 1969	Constance Baker Phillips <i>Assistant Clinical Professor of Dentistry</i> B.A., Temple, D.D.S., Howard, 1976
Jules M. Hoffman <i>Assistant Clinical Professor of Dentistry</i> B.A., Johns Hopkins, 1937; D.D.S., New York University, 1941	John J. Lucca <i>Professor of Dentistry</i> B.A., New York University, 1941; D.D.S., Columbia, 1947	John D. Piro <i>Associate Clinical Professor of Dentistry (in Otolaryngology)</i> D.D.S., Columbia, 1946
John E. Hutton <i>Associate Professor of Clinical Dentistry</i> B.A., Kansas, 1969; D.D.S., Northwestern, 1973; M.S., 1975	Pasquale J. Malpeso <i>Assistant Clinical Professor of Dentistry</i> B.S., Fordham, 1975; D.M.D., Pennsylvania, 1979	Jonathan Prince <i>Assistant Clinical Professor of Dentistry</i> B.A., Elmira, 1974; D.D.S., Columbia, 1980
Arnold S. Jutkowitz <i>Assistant Clinical Professor of Dentistry</i> D.M.D., Pennsylvania, 1966	Gilbert G. Mazur <i>Assistant Clinical Professor of Dentistry</i> B.A., New York University, 1950; M.A., California (Berkeley), 1951; D.M.D., Louisville, 1955	Irvin D. Rafkin <i>Assistant Clinical Professor of Dentistry</i> B.S., Nebraska, 1937; D.D.S., Columbia, 1941
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Arthur D. Krinsky <i>Assistant Clinical Professor of Dentistry</i> B.A., Boston, 1970; D.D.S., Columbia, 1974	Ralph K. Neuhaus <i>Associate Clinical Professor of Dentistry</i> B.S., Moravian, 1961; D.D.S., Columbia, 1965	Marc A. Rosenblum <i>Assistant Professor of Dentistry</i> B.S., B.A., Rutgers, 1966; Ph.D., 1971; D.M.D., College of Medicine and Dentistry of New Jersey, 1979
Berthold Kuerer <i>Assistant Clinical Professor of Dentistry</i> B.A., Hunter, 1950; D.D.S., Columbia, 1955		Louis I. Rubins <i>Associate Clinical Professor of Dentistry</i> B.S., Queens (New York), 1956; D.D.S., Columbia, 1960
Albert J. Kurpis <i>Assistant Clinical Professor of Dentistry</i> B.A., Adelphi, 1970; D.D.S., Columbia, 1974		

Gerald F. Sabol <i>Assistant Clinical Professor of Dentistry</i> B.S., Fairfield, 1965; D.D.S., Maryland, 1970	Nicholas A. Vero, Jr. <i>Associate Clinical Professor of Dentistry</i> D.D.S., Columbia, 1972	John V. Donovan <i>Assistant Clinical Professor of Dentistry</i> B.S., Wagner, 1963; D.D.S., Columbia, 1967
Sanford Salz <i>Assistant Clinical Professor of Dentistry</i> B.S., Queens (New York), 1957; D.D.S., Columbia, 1961	Bernard Weissman <i>Adjunct Assistant Professor</i>	Susan A. Friedman <i>Assistant Clinical Professor of Dentistry</i> B.S., City College (New York), 1970; D.D.S., Pennsylvania, 1973
John M. Scarola <i>Associate Clinical Professor of Dentistry</i> B.S., Fordham, 1956; D.D.S., Columbia, 1960	Thomas A. Wilson <i>Assistant Clinical Professor of Dentistry</i> B.S., Fairleigh Dickinson, 1964; D.D.S., Columbia, 1968	Robert Gabriele <i>Assistant Clinical Professor of Dentistry</i> D.D.S., Columbia, 1970
Victor I. Sendax <i>Adjunct Associate Professor of Dentistry</i> B.A., New York University, 1951; D.D.S., 1955	Jerome A. Zane <i>Associate Clinical Professor of Dentistry</i> D.D.S., Columbia, 1943	Edgar Gattegno <i>Assistant Clinical Professor of Dentistry</i> B.A., New York University, 1942; D.D.S., Columbia, 1945
Mark A. Tepper <i>Assistant Professor of Dentistry</i> B.S., Columbia, 1972; M.S., 1974; D.D.S., 1978; M.D.S., Pittsburgh, 1980	AT ST. LUKE'S-ROOSEVELT HOSPITAL CENTER	Charles W. Goldfarb <i>Assistant Clinical Professor of Dentistry</i> B.S., College of the City of New York, 1939; D.D.S., New York University, 1943
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Geoffrey W. Robinson <i>Assistant Clinical Professor of Dentistry</i> B.A., Middlebury, 1966; D.D.S., Columbia, 1970	Extramural Clinical Clerkship Program	<i>Adjunct Assistant Professor</i> Bernard D. Gold, D.M.D.
Harry H. Schaefer <i>Assistant Clinical Professor of Dentistry</i> B.S., Northwestern, 1942; D.D.S., 1942; D.D.S., New York University, 1943	AT BETH ISRAEL MEDICAL CENTER <i>Lecturers</i> Charles E. Barr, D.D.S. (also Community Health) Bernard Klapper, D.D.S. Mary Victoria Lapinski, D.D.S. Alan Schwimmer, D.D.S. Richard Schwimmer, D.D.S.	<i>Instructor</i> Alfred C. Joseph, D.D.S. AT LUTHERAN MEDICAL CENTER <i>Associate Clinical Professor</i> Neal A. Demby, D.M.D. (also Community Health)
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Adjunct Associate Professor
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David Robert Silken, D.D.S.

Michael Steven Wolfman, D.M.D.

AT PENINSULA HOSPITAL CENTER

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George T. Ward, D.D.S.

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Gilbert Kunken, D.D.S.

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MEDICINE

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B.A., Columbia, 1968; M.D., 1972

Ethel S. Siris
Assistant Professor of Medicine
B.A., Harvard, 1967; M.D., Columbia, 1971

Alan R. Tall
Associate Professor of Medicine
M.D., Sydney, 1971

Jack B. Weissman
Assistant Professor of Clinical Medicine
B.A., New York University, 1966; M.D., Harvard, 1970

MICROBIOLOGY

Chairman
Professor Harold S. Ginsberg

William L. Cleveland
Assistant Professor of Microbiology
B.S., Columbia, 1967; Ph.D., Rutgers, 1975

Philip A. D'Alesandro
Associate Professor of Public Health and Microbiology
B.Sc., Rutgers, 1952; M.Sc., 1954; Ph.D., Chicago, 1958

Dickson D. Despommier
Professor of Public Health and Microbiology
B.S., Fairleigh Dickinson, 1962; M.S., Columbia, 1964; Ph.D., Notre Dame, 1967

Paul D. Ellner

Professor of Microbiology
B.S., Long Island, 1949;
M.S., Southern California,
1952; Ph.D., Maryland,
1956

Bernard F. Erlanger

Professor of Microbiology
B.S., College of the City of
New York, 1943; M.A.,
New York University,
1949; Ph.D., Columbia,
1951

David H. Figurski

*Assistant Professor of
Microbiology*
B.S., Pittsburgh, 1963;
Ph.D., Rochester, 1974

Mary Suzanne Holmes

Giannini
*Assistant Professor of Public
Health and Microbiology*
B.A., New York
University, 1966; Ph.D.,
Rutgers, 1974

Harold S. Ginsberg

*John E. Borne Professor of
Microbiology*
B.A., Duke, 1937; M.D.,
Tulane, 1941

Alexander Goldfarb

*Assistant Professor of
Microbiology*
Diploma, Moscow State
(U.S.S.R.), 1969; Ph.D.,
Weizmann Institute of
Science (Israel), 1980

Elvin A. Kabat

*Higgins Professor of
Microbiology and Human
Genetics and Development*
B.S., College of the City of
New York, 1932; M.A.,
Columbia, 1934; Ph.D.,
1937

Wladislaw Manski

Professor of Microbiology
M. Phil., Warsaw, 1939;
D.Sc., Wroclaw, 1951

Sherie L. Morrison

*Associate Professor of
Microbiology*
B.A., Stanford, 1963;
Ph.D., 1966

Minh Chi Nguyen-Huu

*Assistant Professor of
Microbiology (in Urology)*
M.S., Technical University
(Berlin), 1975; Ph.D., Max
Planck Institute, 1978

Richard C. Parker

*Assistant Professor of
Microbiology*
B.S., Massachusetts
Institute of Technology,
1974; Ph.D., California
Institute of Technology,
1979

Benvenuto Pernis

*Professor of Microbiology
and Immunology*
M.D., Milan (Italy), 1947

Alice S. Prince

*Assistant Professor of
Medicine (in Microbiology)*
B.A., Wellesley, 1971;
M.D., Columbia, 1975

Vincent R. Racaniello

*Assistant Professor of
Microbiology*
B.A., Cornell, 1974;
Ph.D., Mt. Sinai (New
York), 1979

Augus C. Sampath

*Associate Clinical Professor
of Pathology in Microbiology*
D.Sc., Strasbourg, 1966

Howard A. Shuman

*Assistant Professor of
Microbiology*
B.S., Massachusetts, 1974;
Ph.D., Harvard, 1979

Saul J. Silverstein

*Associate Professor of
Microbiology*
B.S., Cornell, 1968; Ph.D.,
Florida, 1971

Charles S. H. Young

*Research Scientist in
Microbiology*
B.A., Oxford, 1966;
D.Phil., 1969

**OTOLARYNG-
OLOGY***Chairman*

Professor Maxwell
Abramson

Maxwell Abramson

Professor of Otolaryngology
B.A., Wesleyan, 1957;
M.D., Union (Albany),
1961

Andrew Blitzer

*Professor of Clinical
Otolaryngology (also
Dentistry)*
B.A., Adelphi, 1966;
D.D.S., Columbia, 1970;
M.D., Mt. Sinai (New
York), 1973

John D. Piro

*Associate Clinical Professor
of Dentistry (in
Otolaryngology)*
B.A., Fordham, 1943;
D.D.S., Columbia, 1946

Robin M. Rankow

*Professor of Clinical
Otolaryngology*
B.S., College of the City of
New York, 1935; D.D.S.,
Columbia, 1940; M.D.,
Rochester, 1950

Lawrence Savetsky

*Associate Clinical Professor
of Otolaryngology*
B.A., New York
University, 1951; M.D.,
State University of New
York (Downstate), 1955

PATHOLOGY*Acting Chairman*

Professor Philip E. Duffy

Elizabeth Ames

*Instructor of Clinical
Pathology*
M.D., Columbia, 1971

Carole L. Berger

*Assistant Professor of
Dermatology and Pathology*
B.S., Columbia, 1966;
M.A., 1971; M.S., 1974;
Ed.D., 1976

Melvin N. Blake

*Clinical Professor of Oral
Pathology*
D.D.S., New York
University, 1955

Christopher P. Crum <i>Assistant Professor of Pathology</i> B.A., Virginia, 1970; M.D., 1974	Charles C. Marboe <i>Assistant Professor of Pathology</i> B.A., Princeton, 1971; M.D., Pennsylvania State, 1976	David N. Silvers <i>Associate Clinical Professor of Dermatology and Pathology</i> B.A., Haverford, 1974; M.D., Duke, 1968
Vivette D'Agati <i>Assistant Professor of Pathology</i> B.A., Yale, 1975; M.D., New York University, 1979	Anthony Marchand <i>Assistant Clinical Professor of Pathology</i> B.A., Connecticut, 1966; M.D., Duke, 1970	Philip Ursell <i>Assistant Professor of Pathology</i> B.A., Haverford, 1972; M.D., Columbia, 1976
Richard Defendini <i>Associate Professor of Clinical Neuropathology</i> B.A., Michigan, 1948; M.A., 1951; M.D., 1961	Kathleen O'Toole <i>Assistant Professor of Pathology</i> B.A., Fordham, 1974; M.D., Einstein, 1978	Bernard Wagner <i>Clinical Professor of Pathology</i> M.D., Hahnemann, 1949
Phillip E. Duffy <i>Professor of Neuropathology</i> B.A., Columbia, 1943; M.D., 1947	Luciano Ozzello <i>Professor of Surgical Pathology</i> M.D., Turin, 1951	PEDIATRICS
John J. Fenoglio <i>Associate Professor of Pathology</i> B.S., Harvard, 1965; M.D., Georgetown, 1969	May Parisien <i>Assistant Professor of Clinical Orthopedic Pathology</i> B.S., Haiti, 1960; M.D., State University of Haiti, 1966	Chairman Professor Michael Katz
Margaret M. Grimes <i>Assistant Professor of Pathology</i> B.A., Rosemont, 1971; M.D., New York Medical College, 1975	Karl H. Perzin <i>Professor of Clinical Surgical Pathology</i> B.A., Columbia, 1954; M.D., 1958	Michael Katz <i>Reuben S. Carpenter</i> <i>Professor of Pediatrics (also Public Health)</i> B.A., Pennsylvania, 1949; M.D., State University of New York (Downstate), 1956; M.S., Columbia, 1963
Robert L. Hirsch <i>Associate Clinical Professor of Pathology</i> B.A., Cornell, 1947; M.D. 1951	Conrad L. Pirani <i>Professor of Pathology</i> M.D., Milan, 1938	Myron Winick <i>Robert R. Williams</i> <i>Professor of Nutrition and Director of the Institute of Human Nutrition</i> B.A., Columbia, 1951; M.S., Illinois, 1952; M.D., State University of New York (Downstate), 1956
Austin D. Johnston <i>Professor of Clinical Pathology (assigned to Orthopedic Surgery)</i> B.A., Columbia, 1945; M.D., 1947	Ralph M. Richart <i>Professor of Pathology (assigned to Obstetrics and Gynecology)</i> B.A., Johns Hopkins, 1954; M.D., Rochester, 1958	PHARMACOLOGY
William Kupsky <i>Assistant Professor of Neuropathology</i> B.S., Massachusetts Institute of Technology, 1974; M.D., Harvard, 1978	Stephen F. Ryan <i>Professor of Clinical Surgical Pathology</i> M.D., Colorado, 1961	Chairman Professor Brian F. Hoffman
Jay H. Lefkowitch <i>Assistant Professor of Pathology</i> B.A., Clark, 1972; M.D., Columbia, 1976	John V. Scholes <i>Assistant Clinical Professor of Pathology</i> M.D., Columbia, 1974	J. Thomas Bigger, Jr. <i>Professor of Pharmacology and of Medicine</i> B.A., Emory, 1955; M.D., Georgia, 1960
		Joseph H. Graziano <i>Associate Professor of Pharmacology (in Pediatrics)</i> B.S., Long Island, 1967; Ph.D., Rutgers, 1971

Brian F. Hoffman <i>David Hosack Professor of Pharmacology</i> B.A., Princeton, 1943; M.D., Long Island College of Medicine, 1947	Qais D. Al-Awqati <i>Associate Professor of Physiology and Medicine</i> M.B., Ch.B., Baghdad, 1962	John D. Koester <i>Senior Research Associate</i> B.A., Wooster, 1965; Ph.D., Columbia, 1971
Frederick G. Hofmann <i>Professor of Pharmacology</i> B.A., Michigan, 1943; Ph.D., Harvard, 1952	Martin Blank <i>Associate Professor of Physiology</i> B.S., College of the City of New York, 1954; Ph.D., Columbia, 1957; Ph.D., Cambridge, 1959	Irving Kupfermann <i>Professor of Physiology and of Psychiatry (in Center for Neurobiology and Behavior)</i> Ph.D., Chicago, 1964
Norman Kahn <i>Professor of Pharmacology and of Dentistry</i> B.A., Columbia, 1954; D.D.S., 1958; Ph.D., 1964	Shu Chien <i>Professor of Physiology</i> M.B., National Taiwan, 1954; Ph.D., Columbia, 1957	Herbert H. Lipowsky <i>Assistant Professor of Physiology</i> M.S., Polytechnic Institute of Brooklyn, 1968; Ph.D., California (San Diego), 1975
Harold C. Neu <i>Professor of Medicine and of Pharmacology</i> B.A., Creighton, 1956; M.D., Johns Hopkins, 1960	Raimond Emmers <i>Associate Professor of Physiology</i> B.A., East Texas Baptist, 1953; M.A., North Carolina (Chapel Hill) 1955; Ph.D., Syracuse, 1958	William L. Nastuk <i>Professor of Physiology</i> B.S., Rutgers, 1939; Ph.D., 1945
Shih-Hsun Ngai <i>Professor of Anesthesiology and of Pharmacology</i> M.B., National Central (Nanking), 1944	Michel Ferin <i>Associate Professor of Physiology (in Obstetrics and Gynecology)</i> M.D., Louvain, 1964	Hugh N. Nellans <i>Assistant Professor of Physiology (in Medicine)</i> B.A., Lawrence, 1967; Ph.D., Yale, 1971
Michael R. Rosen <i>Professor of Pharmacology and of Pediatrics</i> B.A., Wesleyan, 1960; M.D., State University of New York (Downstate), 1964	Jorge Fischbarg <i>Associate Professor of Physiology (in Ophthalmology)</i> M.D., Buenos Aires, 1962; Ph.D., Chicago, 1969	Mero R. Nocenti <i>Professor of Physiology</i> B.A., West Virginia, 1951; M.S., 1952; Ph.D., Rutgers, 1955
Wilbur H. Sawyer <i>Gustavus and Louise Pfeiffer Professor of Pharmacology</i> B.A., Harvard, 1942; M.D., 1945; Ph.D., 1950	Claude P. J. Ghez <i>Associate Professor of Physiology and of Neurology (in Center for Neurobiology and Behavior)</i> B.Sc., Geneva, 1960; M.D., Harvard, 1964	David Schachter <i>Professor of Physiology</i> B.S., New York University, 1946; M.D., 1949
Hsueh-Hwa Wang <i>Professor of Pharmacology</i> M.D., National Central University Medical School (China), 1946	Kung-Ming Jan <i>Assistant Professor of Physiology and of Medicine</i> M.B., National Taiwan, 1967; Ph.D., Columbia, 1971	James H. Schwartz <i>Professor of Physiology and of Neurology (in Center for Neurobiology and Behavior)</i> B.A., Columbia, 1954; M.D., New York University, 1959; Ph.D., Rockefeller, 1964
Andrew L. Wit <i>Professor of Pharmacology</i> B.S., Bates, 1963; Ph.D., Columbia, 1968	Eric R. Kandel <i>Professor of Physiology and of Psychiatry</i> B.A., Harvard, 1952; M.D., New York University, 1956	Samuel C. Silverstein <i>John C. Dalton Professor of Physiology</i> B.A., Dartmouth, 1958; M.D., Einstein, 1963
PHYSIOLOGY		
Chairman Professor Samuel C. Silverstein	PSYCHIATRY	
	<i>Acting Chairman</i> Professor Sidney Malitz	

Stephen K. Firestein
*Assistant Clinical Professor
of Psychiatry*
B.A., Columbia, 1947;
M.D., 1951

Frank S. Jewett
*Assistant Clinical Professor
of Psychiatry (in Dentistry)*
B.A., Yale, 1953; M.D.,
Columbia, 1957

Sidney Malitz
*Professor of Clinical
Psychiatry*
B.S., Tulane, 1943; M.D.,
Chicago, 1946

PUBLIC HEALTH

Dean
Professor Robert J. Weiss

Assistant Dean
Professor Stephen
Wotman

Howard L. Bailit
*Professor and Head,
Division of Health
Administration*
D.M.D., Tufts, 1962;
M.A., Harvard, 1964;
Ph.D., 1967

Philip A. D'Alesandro
*Associate Professor and
Acting Head, Division of
Tropical Medicine (Public
Health [Parasitology] and
Microbiology)*
B.S., Rutgers, 1952; M.S.,
1954; Ph.D., Chicago,
1958

Jack Elinson
*Professor and Head,
Division of Sociomedical
Sciences*
B.S., College of the City of
New York, 1937; M.A.,
George Washington, 1946;
Ph.D., 1954

Joseph L. Fleiss
*Professor and Head,
Division of Biostatistics*
B.A., Columbia, 1959;
M.S., 1961; Ph.D., 1967

Jennifer L. Kelsey
*Professor and Head,
Division of Epidemiology*
B.A., Smith, 1964;
M.P.H., Yale, 1966; M.
Phil., 1968; Ph.D., 1969

Allan G. Rosenfield
*Professor and Head,
Division of Population and
Family Health (Public
Health and Obstetrics and
Gynecology) (in the Center
for Population and Family
Health)*
B.A., Harvard, 1955;
M.D., Columbia, 1959

I. Bernard Weinstein
*Professor and Head,
Division of Environmental
Sciences (Medicine [in the
Cancer Center]/Institute of
Cancer Research] and
Public Health
[Environmental Sciences])*
B.S., Wisconsin, 1952;
M.D., 1955

Robert J. Weiss
Joseph R. DeLamar
*Professor of Public Health
Practice*
B.A., George Washington,
1947; M.D., Columbia,
1951; M.A. (hon.),
Dartmouth, 1964

Stephen Wotman
*Associate Professor of
Dentistry (Public Health)*
D.D.S., Pennsylvania,
1956

SURGERY

Chairman
Professor Keith Reemtsma

Keith Reemtsma
Professor of Surgery
B.S., Idaho State, 1945;
M.D., Pennsylvania, 1949

DENTAL AND ORAL SURGERY: OTHER OFFICERS OF INSTRUCTION

Instructors

William J. Amato, D.D.S.
Anthony S. Arcomano,
D.D.S.
Howard S. Atlas, D.D.S.
Andrew E. Baron, D.D.S.
Todd J. Berman, D.M.D.
Alan P. Blondman, D.D.S.
Dennis P. Bohlin, D.D.S.
Valerie R. Brest, D.D.S.
Lazarus Camesas, D.D.S.
John I. Cardillo, D.D.S.
Henry Chang, Jr., D.D.S.
Marie-Lourdes Charles,
D.D.S.

Joseph A. Ciccio, Jr.,
D.D.S.
Jeffrey Cloidt, D.D.S.
Gary E. Cohn, D.D.S.
Louis G. Colacicco, D.D.S.
Sharon C. Colacino,
Ph.D., (Anatomy and
Cell Biology)
John J. Cuskley, D.D.S.
Joseph C. De Lisi, Jr.,
D.D.S.
Zelda Diatlo, M.S.W.
Margaret M. Duby, M.D.
(Pathology)

Amy B. Dukoff, D.D.S.
Susan M. Esposito, B.S.
Armando R. Fernandez,
D.D.S.

Gerald E. Finke, D.D.S.
Diana L. Fintel, D.D.S.
Eva Paulson Fischer,
D.D.S.

John M. Fox, D.D.S.
Joan L. Galterio, D.D.S.
Susan Gellin, M.S.W.
Jorge M. Cervantes
Grundy, D.D.S.
Jacques Honig, D.D.S. (at
St. Luke's-Roosevelt
Hospital Center)
Elizabeth E. Hume,
D.D.S.
Mark Nathan Jacobson,
D.D.S.
Lucian Kahan, D.D.S.
Martin A. Kaminker,
D.M.D.
Jed Steven Kanner, D.D.S.
Claudia Kaplan, D.D.S.

- Susan D. Karabin, D.D.S.
 Barbara Kaswiner, B.S.
 Vijai Katatikarn, M.D.
(Pathology)
 Charisse A. M. Kellar, B.S.
 Bernard Keller, D.D.S.
 Thomas J. Kilgannon, III,
 D.D.S.
 Steven M. Klein, D.D.S.
 Steven F. Kornhaber,
 D.D.S.
 Allen C. Kozin, D.D.S.
 Veronique S. Krieger,
 D.M.D.
 Laureen Langer, D.D.S.
 Alan H. Liebnick, D.D.S.
 Richard H. Low, D.D.S.
 Thomas J. Magnani,
 D.D.S.
 Mani S. Matta, D.D.S.
 Carla C. Mussa, D.D.S.
 Thomas Niemczyk, D.D.S.
 Milagros F. Ona-Sarino,
 M.D. (*Pathology*)
 Ira H. Orenstein, D.D.S.
 Wayne T. Prigoff, D.D.S.
 Nancy Rashidi, D.D.S.
 Edward S. Roth, D.D.S.
 Restituto S. Ruiz, D.M.D.
 Richard W. Sadles, D.D.S.
 Elena C. Schmidt, Ph.D.
(Pathology)
 Steven J. Scrivani, D.D.S.
 Isaac Seinuk, D.D.S.,
 M.P.H.
 Corazon S. Sian, M.D.
(Pathology)
 Richard Sikes, D.M.D.
 Steven R. Singer, D.D.S.
 Leslie A. Smalley, B.S.
 Gary W. Stern, D.M.D.
 Elena Suditu, D.D.S.
 Edward K. Swain, Jr.,
 D.M.D. (*at St. Luke's-
 Roosevelt Hospital
 Center*)
 Steven B. Syrop, D.D.S.
 Michael R. Szabatura,
 D.D.S.
 Donald R. Tanenbaum,
 D.D.S.
 Louys Thomas, M.D.
(Pathology)
 Ana Marilyn Torrado,
 D.D.S.
- Thomas A. Travers,
 D.D.S., M.P.H.
 Irving Tregerman, D.D.S.
 Daniel V. Trezza, D.D.S.
 Fred P. Tripodi, D.D.S.
 Jeffrey M. Tulman, D.D.S.
 Noel N. Weekes, M.D.
(Pathology)
 Hallie A. Williams,
 D.D.S., M.P.H.
 Barry R. Wolinsky, D.D.S.
 Monica C. Yank, M.D.
(Pathology)
 Daniel Lee Zedeker,
 D.D.S.
 Robert Ziccardi, D.D.S.
- Instructor in Clinical
 Dentistry*
 Arthur F. Johnson
- Lecturers*
 Michael Baden, M.D.
(Pathology)
 Charles E. Barr, D.D.S.,
 M.S.
 Judith M. Blazer, M.S.
 Matthew Brown, D.D.S.
 Paul Brown M.D.
(Pathology)
 Victor S. Caronia, D.D.S.
 Frank V. Celenza, D.D.S.,
 M.S.
 Angelo Chiarenza, D.D.S.
 Gerard L. Courtade,
 D.D.S.
 Burney M. Croll, D.D.S.
 Hyman Donnenfeld, M.D.
(Pathology)
 Stephanie A. Fintel, D.D.S.
 Stanley L. Gibbs, D.D.S.
 Brigitte Graf-Pinthus,
 D.M.D.
 Albert J. Gruner, D.M.D.
 Wesley Halpert, D.D.S.
 Dale E. Hopp, D.D.S.
 Joseph E. Kafer, D.M.D.
 Janis V. Klavins, M.D.
(Pathology)
 Seymour Koster, D.D.S.
 John F. Kosinski, D.D.S.
 Ronald L. Moloff, D.D.S.
 Mata K. Nikias, D.D.S.,
 M.P.H., Ph.D.
 Anthony Ricciardi, D.D.S.
 Howard Ruderman,
 D.D.S.
 Harry Shpuntoff, D.D.S.
- Judy Ann Taylor, D.D.S.
 James L. Verna, D.D.S.
 Spyros M. Vratsanos,
 Ph.D.
 Ephraim Weinstein, D.D.S.
 Stanley M. Weinstock,
 D.D.S.
- Special Lecturers*
 Frank E. Beube, L.D.S.,
 D.D.S.
 Lester R. Cahn, D.D.S.
(Pathology)
 Alvin D. Cederbaum,
 D.M.D.
 David Cowen, M.D.
(Pathology)
 Robert L. Crowley, D.D.S.
 Harold Darwin, D.D.S.
 Gustav T. Durrer, D.D.S.
 Charles A. Ely, Ph.D.
*(Anatomy and Cell
 Biology)*
 Herbert P. Fritz, D.D.S.
 C. Zent Garber, M.D.
(Pathology)
 Bernard Gurian, D.D.S.
 George W. Hindels, M.D.,
 D.D.S.
 Ellen N. Hosiosky, D.D.S.
 Raffael Lattes, M.D.,
 Med.Sc.D. (*Pathology*)
 Joseph M. Leavitt, D.D.S.
 Matthew D. Levin, D.D.S.
 Melvin L. Morris, D.D.S.
 Fred Rothenberg, D.D.S.
 Arthur Shain, D.D.S.
 Herbert F. Silvers, D.D.S.
 William H. Silverstein,
 D.D.S.
 Abner Wolf, Ph.D.
(Pathology)
 Edward V. Zegarelli,
 D.D.S., M.S.
- Staff Associates*
 Jutta E. Dorscher-Kim,
 M.I.A.
 Gladys Teitelman de
 Pinczuk, Ph.D.
*(Anatomy and Cell
 Biology)*
- Assistant*
 Mitchell L. Beck, D.D.S.

THE PRESBYTERIAN HOSPITAL DENTAL SERVICE

Director and Attending

Dentist

Allan J. Formicola

Associate Director

Steven M. Roser

Consultants

Melvin L. Morris

Fred Rothenberg

Consultants Emeritus

Solon A. Ellison

Melvin L. Moss

Carl R. Oman

Solomon N. Rosenstein

Albin R. Seidel

Edward V. Zegarelli

Attending Dental Surgeons

Jacob Abelson

Harold D. Baumash

Stanislaw H. Brzustowitz

Edward A. Cain, Jr.

Nicholas A. Di Salvo

Robert Gottsegen

Alvin J. Grayson

Sidney L. Horowitz

Norman Kahn

Mortimer Karmiol

Austin H. Kutscher

Joseph M. Leavitt

John K. Lind

John J. Lucca

Irwin D. Mandel

Michael Z. Marder

George A. Minervini

Henry I. Nahoum

Murray Schwartz

Steven S. Scrivani

Julius D. Tarshis

Ennio L. Uccellani

Associate Attending Dental

Surgeons

Sebastian A. Bruno

Thomas J. Cangialosi

Victor S. Caronia

Mark S. Cohen

Martin J. Davis

Joseph A. DeJulia

Daniel H. Fine

Robert S. Goldman

John E. Hutton

David Kaplan

Frances R. Karlan

Eugene P. LaSota

Lawrence Marder

Guy D. Metcalf

Dennis N. Morea

Herbert Ostreicher

John D. Piro

Steven M. Roser

Louis I. Rubins

Robert N. Schiff, Jr.

Daniel D. Schube

Boaz M. Shattan

Morton J. Stern

Stephen Wotman

Nicholas A. Vero, Jr.

Jerome A. Zane

David J. Zegarelli

Albert N. Zengo

Assistant Attending Dental

Surgeons

Jerome Bartwink

Mitchell L. Beck

Dory Calev

John T. Cardillo

Thomas J. Cleary

Donald Cohen

Louis Colacicco

Stella S. Efstartiadis

Armando R. Fernandez

Robert Gabriele

Steven J. Goldberg

Michael Jay Goldberg

Heidi L. Hills

Ian Y. Hu

Howard A. Israel

Paul R. Kamen

Martin Kaminker

Syngcuk Kim

David N. Kritchman

Ronnie Myers

Paul N. Rogow

Marc A. Rosenblum

Mark A. Tepper

Dante M. Torrese

Fred Tripodi

Bertram J. Weisman

Assistant Dentists

Todd J. Berman

Claudia Kaplan

Gary W. Stern

Jeffrey M. Tulman

Barry Wolinsky

Academic Calendar, 1985–1986, 1986–1987

MAJOR RELIGIOUS HOLIDAYS

For a statement of University policy regarding religious holidays, see *Registration, Expenses, and Financial Aid—Religious Holidays*.

Some of the major holidays occurring on weekdays are shown below. The Jewish holy days begin at sundown of the preceding day.

1985–1986

Rosh Hashanah

Monday, Tuesday, September 16, 17

Yom Kippur

Wednesday, September 25

First days of Succoth

Monday, Tuesday, September 30,
October 1

Concluding days of Succoth

Monday, Tuesday, October 7, 8

Good Friday

Friday, March 28

First day of Passover

Thursday, April 24

Concluding days of Passover

Wednesday, Thursday, April 30,
May 1

Shavuoth

Friday, Saturday, June 13, 14

Id al Fitr

Not yet announced

Id al Adha

Not yet announced

1986–1987

Rosh Hashanah

Saturday, Sunday, October 4, 5

Yom Kippur

Monday, October 13

First days of Succoth

Saturday, Sunday, October 18, 19

Concluding days of Succoth
Saturday, Sunday, October 25, 26

First days of Passover
Tuesday, Wednesday, April 14, 15

Good Friday
Friday, April 17

Concluding days of Passover
Monday, Tuesday, April 20, 21

Shavuoth
Wednesday, Thursday, May 3, 4

Id al Fitr
Not yet announced

Id al Adha
Not yet announced

AUTUMN TERM 1985

August	1	Thursday. Last day to apply for October degrees and certificates. A <i>late fee</i> must be paid by students who apply or reapply after this date.
	20-22	Tuesday-Thursday. Orientation for Class of 1989, School of Dental and Oral Surgery.
	22-23	Thursday-Friday. Registration for the academic year for first- and second-year D.D.S. degree students. A <i>late fee</i> must be paid by students allowed to register after this date.
	26	Monday. First term begins for first- and second-year D.D.S. students.
September	2	Monday. Labor Day. University holiday.
	3-4	Tuesday-Wednesday. Registration for the academic year for students in the Division of Dental Hygiene. A <i>late fee</i> must be paid by students allowed to register after this date.
	4	Wednesday. Registration for academic year for first-year postdoctoral orthodontic students. A <i>late fee</i> must be paid by students allowed to register after this date.

	5	Thursday. Registration for the academic year for third- and fourth-year D.D.S. candidates; classes begin for Dental Hygiene Students. A <i>late fee</i> must be paid by students allowed to register after this date.
	5	Thursday. First term begins for first-year postdoctoral orthodontic students.
	9	Monday. Classes begin for third- and fourth-year D.D.S. degree candidates.
	11	Wednesday. Summer Session ends for current first-year postdoctoral orthodontics students.
	12-13	Thursday-Friday. Orientation for all postdoctoral dental students.
	13	Friday. Registration for the academic year for all students in the postdoctoral programs (except for first-year orthodontics students). A <i>late fee</i> must be paid by students allowed to register after this date.
	13	Friday. Last day to change programs and to apply to audit courses. No adjustment of fees for individual courses dropped after this date.
	16	Monday. First term begins for all students in the postdoctoral programs (except for first-year postdoctoral orthodontics students).
October	23	Wednesday. Award of October degrees and certificates.
November	1	Friday. Last day to apply or reapply for all January degrees and certificates. A <i>late fee</i> must be paid by students who apply or reapply after this date.
	2	Saturday. Application deadline for National Board Dental Examination of December 2, 1985.

	4	Monday. Academic holiday for students in the Division of Dental Hygiene.
	5	Tuesday. Election Day. University holiday.
	14	Thursday. Last day to drop individual courses for students in the Division of Dental Hygiene.
	22	Friday. End of first trimester for third- and fourth-year D.D.S. degree candidates.
	28	Monday, through December 1, Sunday. Thanksgiving holidays for all students in all programs.
December	2	Monday. National Board Dental Examinations, Part I; National Board Dental Hygiene Examinations.
	2-3	Monday-Tuesday. National Board Dental Examinations, Part II.
	5	Thursday. Optional early registration for the spring term 1986 for students in the Division of Dental Hygiene.
	6	Friday. Last day to file late application for January degrees and certificates.
	11	Wednesday. Classes end for students in the Division of Dental Hygiene.
	21	Saturday, through January 5, 1986, Sunday. Winter holidays for second-, third-, and fourth-year D.D.S. degree candidates and for all students in the postdoctoral programs.
	24	Tuesday, through January 5, 1986, Sunday. Winter holidays for Dental Hygiene students.

SPRING TERM 1986

January	10	Friday. Registration for students in the Division of Dental Hygiene. A <i>late fee</i> must be paid by students allowed to register after this date.
	13	Monday. Classes begin for students in the Division of Dental Hygiene.
	15	Wednesday. First term ends for all postdoctoral students.
	16	Thursday. Second term begins for all postdoctoral students.
	22	Wednesday. Award of January degrees and certificates.
	29	Wednesday. Last day to change programs and to apply to audit courses. No adjustment of fees for individual courses dropped after this date.
February	17	Monday. Washington's Birthday observed. Academic holiday. Last day to apply for all May degrees and certificates. A <i>late fee</i> must be paid by students who apply or reapply after this date.
	21	Friday. Second trimester ends for third- and fourth-year D.D.S. candidates.
	24	Monday. Third trimester begins for third- and fourth-year D.D.S. candidates.
March	1	Saturday. Application deadline for National Board Dental Examinations of April 1-2, 1986.
	8-16	Saturday-Sunday. Spring holidays for students in the Division of Dental Hygiene.
	23-30	Saturday-Sunday. Spring holidays for second-, third-, and fourth-year D.D.S. degree candidates and all postdoctoral dental students.

April	1	Tuesday. Last day to file late application for May degrees and certificates.
	1-2	Tuesday-Wednesday. National Board Dental Examination, Part II.
May	9	Friday. Classes end for fourth-year D.D.S. degree candidates in the Division of Dental Hygiene.
	14	Wednesday. Second term ends for all postdoctoral dental students.
	15	Thursday. Summer term begins for third-year D.D.S. degree candidates.
	16	Friday. Third trimester ends for third-year D.D.S. degree candidates. Second term ends for second-year D.D.S. candidates.

COMMENCEMENT 1986

May	11	Sunday. Baccalaureate Service.
	14	Wednesday. Conferral of May degrees and certificates.
	15	Thursday. Conferring of awards, School of Dental and Oral Surgery.

SUMMER SESSION 1986

May	15	Thursday. Summer Session begins for postdoctoral orthodontics students.
	26	Monday. Memorial Day observed. University holiday.
	27	Tuesday. Summer Sessions II and III begin.
June	13	Friday. Second term ends for first-year D.D.S. degree candidates.
	16	Monday. Application deadline for National Board Dental Examinations of July 14.

	25	Wednesday. Summer Session ends for second-year postdoctoral orthodontic students.
July	4	Friday. Independence Day. University holiday.
	14	Monday. National Board Dental Examinations, Part I.
	18	Friday. End of Summer Sessions II and III.
	26	Saturday, through July 7, Sunday. Summer recess for first-year postdoctoral orthodontics students.

AUTUMN TERM 1986

August	25	Monday. First term begins for first- and second-year D.D.S. degree candidates.
September	1	Monday. Labor Day. University holiday.
	2-4	Tuesday-Thursday. Fall registration. A <i>late fee</i> must be paid by students allowed to register after this date.
	8	Monday. Classes begin for third- and fourth-year D.D.S. degree candidates.
	23	Wednesday. Award of October degrees and certificates.
November	4	Tuesday. Election Day.
	21	Friday. End of first trimester for third- and fourth-year D.D.S. degree candidates.
	24	Monday. Start of second trimester for third- and fourth-year D.D.S. degree candidates.
	27-30	Thursday-Sunday. Thanksgiving holidays for all students in all programs.

December	20	Saturday, through January 4, 1987, Sunday. Winter holidays for all students in all programs.
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SPRING TERM 1987

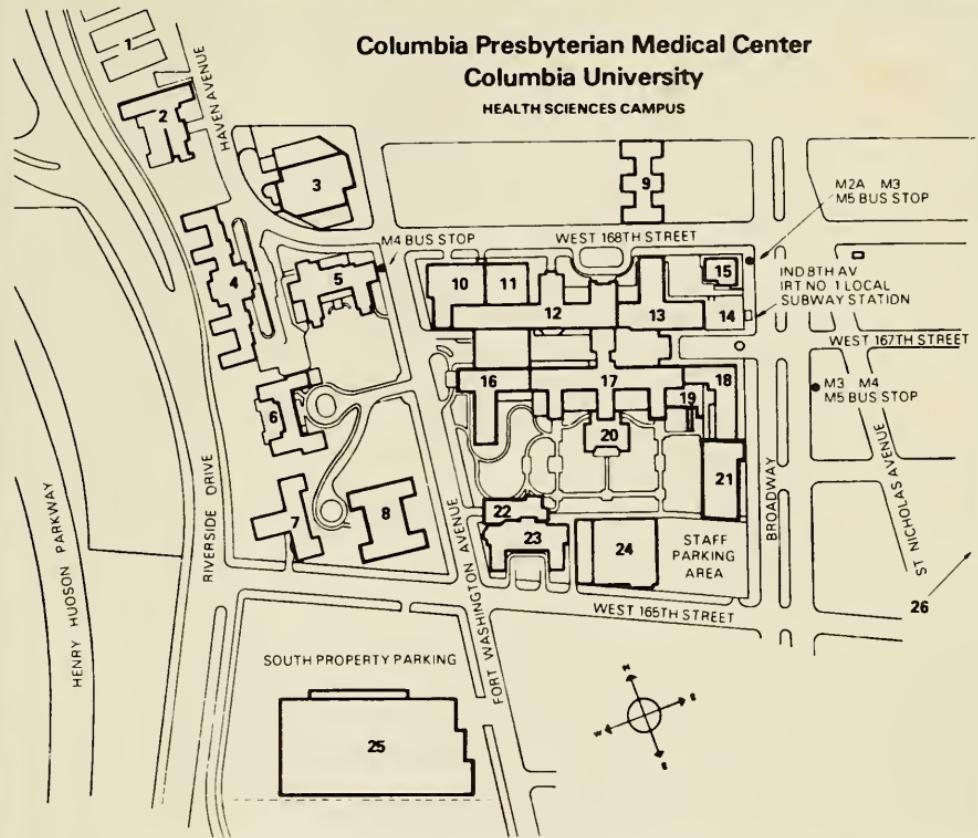
January	14-16	Spring registration. A <i>late fee</i> must be paid by students allowed to register after this date.
	21	Wednesday. Award of January degrees and certificates.
February	16	Monday. Washington's Birthday observed. Academic holiday.
	20	Friday. End of second trimester for third- and fourth-year students.
	23	Start of third trimester for third- and fourth-year students.
May	1	Friday. End of third trimester for fourth-year D.D.S. degree candidates.
	8	Friday. End of third trimester for third-year D.D.S. degree candidates.
	25	Monday. Memorial Day observed. Academic holiday.

COMMENCEMENT 1987

May	10	Sunday. Baccalaureate service.
	13	Wednesday. Conferring of May degrees and certificates.
	14	Thursday. Conferring of awards, School of Dental and Oral Surgery.

**Columbia Presbyterian Medical Center
Columbia University**

HEALTH SCIENCES CAMPUS



- 11** Alumni Auditorium
- 3** Augustus Long Library
- 8** Dana W. Atchley Pavilion
- 18** The Babies Hospital
- 21** Babies Hospital Research, Teaching, and Office Addition
- 2** Bard Hall Medical Student Residence
- 1** Bard Haven Towers
- 10** William Black Medical Research Building
- 3** Cancer Center/Institute of Cancer Research
- 24** Central Service Building
- 12** College of Physicians and Surgeons
- 26** Center for Community Health Systems
- 13** School of Dental and Oral Surgery
- 9** Georgian Nurses Residence
- 22** Edward S. Harkness Eye Institute
- 23** Eye Institute Research Laboratories
- 7** Harkness Memorial Hall
- 16** Harkness Pavilion
- 20** Pauline A. Hartford Memorial Chapel
- 3** Julius and Armand Hammer Health Sciences Center
- 3** Institute of Human Nutrition
- 2/12** International Institute for the Study of Human Reproduction
- 6** Anna C. Maxwell Hall, School of Nursing Residence
- 5** The Neurological Institute of New York
- 6** School of Nursing
- 25** Parking facilities
- 17** Presbyterian Hospital New York Orthopedic Hospital Sloane Hospital for Women Squier Urological Clinic
- 4** New York State Psychiatric Institute
- 4** Psychoanalytic Center
- 15** School of Public Health
- 19** Radiotherapy Center
- 13** Vanderbilt Clinic
- 14** Vanderbilt Clinic Addition

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